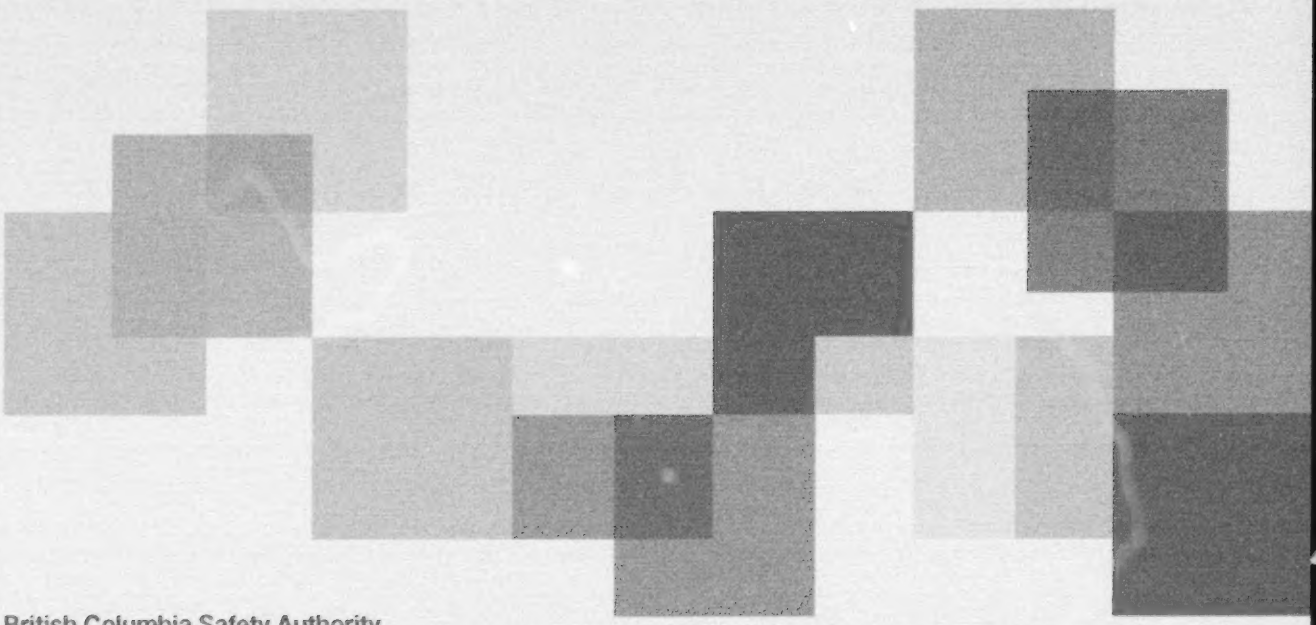
British Columbia Safety Authority

Safety Authority

State of Safety Report 2012



British Columbia Safety Authority

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State of Safety Report 2012

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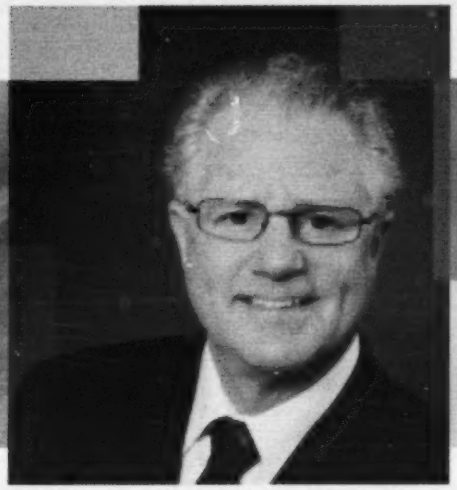


Message from the Chair

I am pleased to present the 2012 State of Safety Report, which provides a review of information gathered from all our assessments and investigations in the past year.

In 2012, BC Safety Authority developed a 10-Year Strategy that defines where we want to influence the technical safety system and describes how we intend to get there. We will sharpen our focus on risk management while supporting innovation in the technologies within our mandate. It's important that our work fosters confidence and collaboration in the safety system so we will continue to look to our clients, stakeholders, industry and government for their participation and support.

Our accident prevention model is the steady foundation for our efforts to facilitate an increasingly adaptable and self-reinforcing safety system. Through assessment, education and outreach, enforcement and research we gather information that is further used to promote safety. Continuously enhancing our understanding of safety risks correlates with our commitment to supporting clients with value-added services. Our employees will be at the forefront of developing and delivering these services as we all contribute to building a more engaged, knowledge-based organization. All of our resources will continue to be prudently managed in recognition of our accountability to the communities that we serve.

I would like to extend my sincere appreciation to all of those stakeholders that have helped us to improve over the past year. I look forward to our future collaborations and successes together and I invite you to read our 10-Year Strategy. We are making progress towards our vision of having safe technical systems everywhere and the information in this report will be used to help build a stronger safety system moving forward.

P. Cook

Peter Cook
Chair of the Board

Message from the President and Chief Executive Officer

The 2012 State of Safety Report is the translation of data into safety knowledge. As we continue to shift our risk management focus from correction to prevention, collecting and analyzing relevant data will remain a key asset in sustaining a strong safety system.

In 2012, BC Safety Authority conducted nearly 60,000 physical assessments. We handled over 500 incident reports and issued close to 200,000 installation and operating permits. These transactions represent BC's investment in managing technical risk.

BC Safety Authority believes it is imperative to align our resources and efforts with programs and projects intended to manage risks over the long term. Among our many efforts to promote safety, we are making progress with Alternative Safety Approaches that engage clients in shifting from prescriptive regulation to a more comprehensive system. We also continue to develop our enforcement program to bring clients into compliance with the *Safety Standards Act* and the *Railway Safety Act* and address safety concerns. At the same time, we are on course with our IT business system replacement project to give clients access to new online services while allowing our research and technical teams to better collect, extract, manage and share safety knowledge.

As a knowledge-based organization, we have a solid road map in our 10-Year Strategy as we work toward achieving our vision of *Safe technical systems. Everywhere.* In order to do so, we welcome the feedback and ongoing sharing of information that makes a safety system more than the sum of its parts.

Catherine Roome, P. Eng.
President and CEO

About BC Safety Autority

BC Safety Authority is an independent, self-funded organization mandated to oversee the safe installation and operation of technical systems and equipment. In addition to issuing permits, licences and certificates, we work with industry to reduce safety risks through assessment, education and outreach, enforcement, and research.

Our Vision: **Safe technical systems. Everywhere.**

Our Mission: **We build your confidence in safety systems for life – through a focus on risk and support for innovation.**

WHAT WE DO

BC Safety Authority (BCSA) delivers safety services across the following technologies in the province:

- Electrical equipment and systems
- Boilers, pressure vessels and refrigeration systems
- Natural gas and propane appliances and systems, including hydrogen
- Elevating devices, such as elevators and escalators
- Railways, including commuter rail
- Passenger ropeways, such as aerial trams and ski lifts
- Amusement devices
- Complex and integrated technical systems involving multiple technologies

OUR SERVICES

In order to promote safe practices, our services include:

- Assessing technical work and equipment, including collecting information through inspection, incident investigation and registering new equipment and designs.
- Certifying individuals and licensing contractors and operators to perform regulated work.
- Supporting clients in the development of alternative safety approaches, and auditing their safety management plans or equivalent standards approaches.
- Taking enforcement actions that promote an equitable safety system where all participants are compliant with regulations.
- Educating our clients and the public about technical safety to better control risks.
- Conducting research, including contributing to provincial and national code development and updating regulations for the technologies we serve.

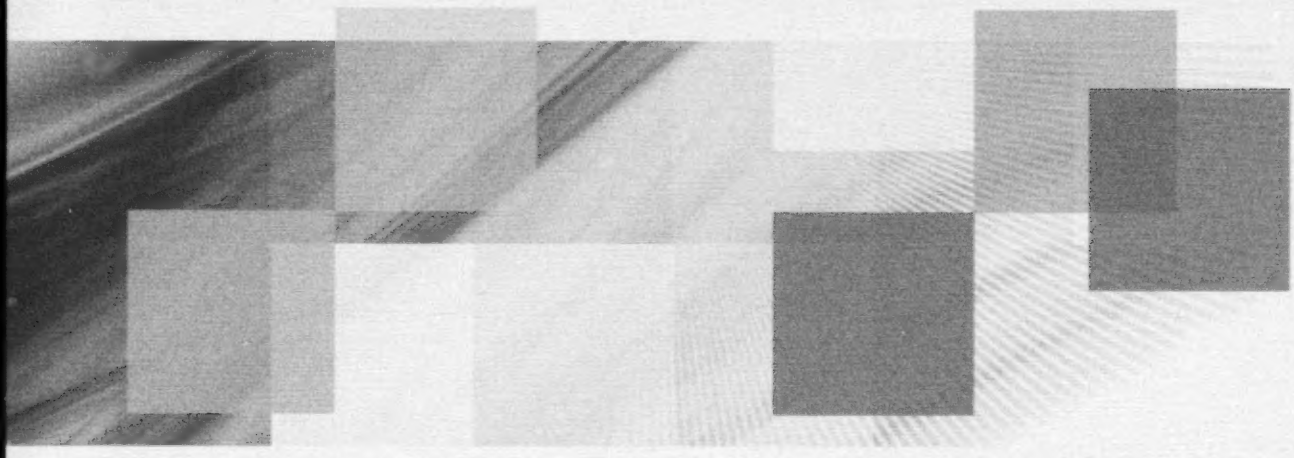
OUR LEGISLATIVE AND REGULATORY FRAMEWORK

BC Safety Authority operates within a legislative and regulatory framework that includes:

- *Safety Authority Act*
- *Safety Standards Act and Regulations*
- *British Columbia Railway Act, Railway Safety Act and Regulations*
- *Administrative Tribunals Act*
- *Freedom of Information and Protection of Privacy Act*
- *Ombudsperson Act*
- *Offence Act*

For further information, including access to our 10-Year Strategy, Annual Report, and Business Plan, please visit our website at www.safetyauthority.ca.

About the State of Safety Report



BC Safety Authority receives reports of incidents and conducts assessments of regulated equipment and work[1]. Through investigation and assessment, BC Safety Authority advances the knowledge of safety risks and focuses attention toward managing those risks.

The 2012 State of Safety report is the ninth publication of its kind from BC Safety Authority. In accordance with the administrative agreement between the Province of British Columbia and BC Safety Authority, the State of Safety report provides:

- Analyses of incident and injury trends in all sectors regulated by BC Safety Authority.
- Explanations for incident and injury trends, particularly significant deviations.
- Comparisons, where possible, between BC incidents and those of other jurisdictions.
- Responses to information gathered from investigations, including understanding causes and taking necessary action to resolve systemic problems.
- A summary of risk-based initiatives to educate and communicate with the general public, clients and stakeholders of BC Safety Authority safety services.
- A summary of national committees and inter-provincial working groups where BC Safety Authority has participated and provided leadership; and
- A listing of enforcement actions taken by BC Safety Authority.

This report is organized into two main sections. Each section aims to provide an understanding of safety hazards observed in 2012 followed by the efforts led by BC Safety Authority to manage those hazards.

The first section provides an overall summary of hazards and safety management efforts at an organizational level while the second section provides a similar analysis specific to each industry sector regulated by BC Safety Authority.

1 Certain municipalities administer portions of the *Safety Standards Act* in lieu of BC Safety Authority. These municipalities and their scope of administration are detailed in Appendix G.

INCIDENTS

Incidents involving work or equipment regulated under the *Safety Standards Act* are required to be reported to the appropriate Provincial Safety Manager. BC Safety Authority investigates many of these incidents to gain an understanding of safety hazards in BC and what actions can be taken to manage those hazards. Figures 1 and 2 below show the total number of incidents reported to BC Safety Authority in 2012 and previous years.

FIGURE 1: Incident Reports by Regulated Industry Sector 2008-2012

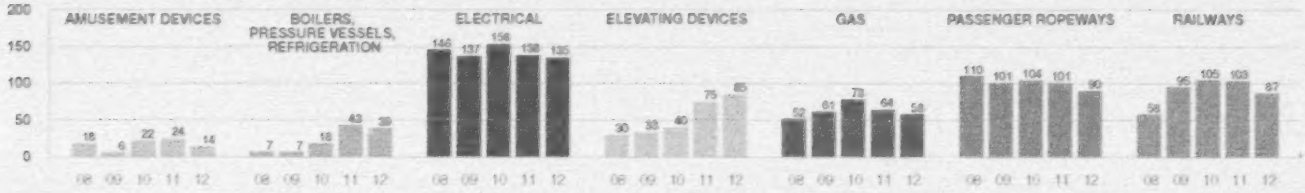
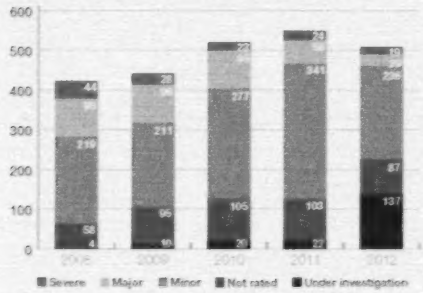


FIGURE 2: Incidents Reported 2008-2012



Note 1: Incidents identified as *UNDER INVESTIGATION* were open at the time of report preparation. | Note 2: Railway accidents and incidents are not given a rating and are identified as *not rated* in Figure 2.

TABLE 1: Severe and Major Incidents in 2012

SEVERE		MAJOR	
Qty	Type	Qty	Type
13	Explosions and/or fires where regulated equipment was suspected to be involved	14	Explosions and/or fires where regulated equipment was suspected to be involved
3	Carbon monoxide exposure	10	Slips/trips/falls and unintended contact with regulated equipment
1	Electrical shock	2	Boiler component or system failures
1	Elevator doors forced open	1	Carbon monoxide exposure
1	Unintended elevator door closure	1	Gas leak from damaged underground gas line
		1	Ropeway carrier slid on haul line

There are no significant changes in the overall number and types of incidents reported to BC Safety Authority. Fire-related incidents and residential carbon monoxide exposures were the predominant type of *SEVERE* and *MAJOR* incidents reported, which is consistent with previous years. More information including basic descriptions of these incidents and other incidents occurring in 2012 is available in Appendix A.

INJURIES

Injuries reported as a result of incidents are an important indicator of hazards inherent to the operation of regulated equipment. Injuries resulting from the incidents reported above are summarized below.

FIGURE 3: Injury Reports by Regulated Industry Sector 2008-2012

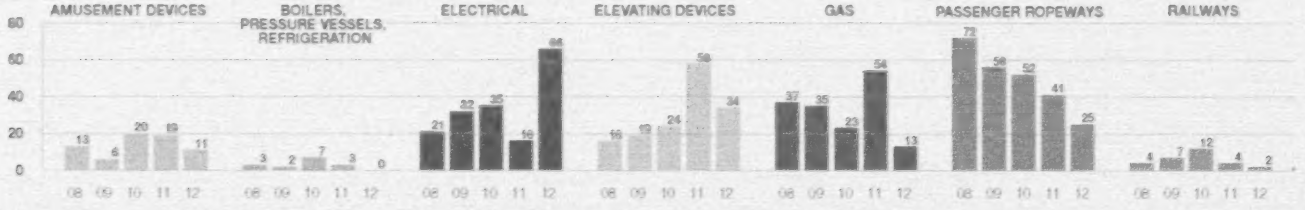
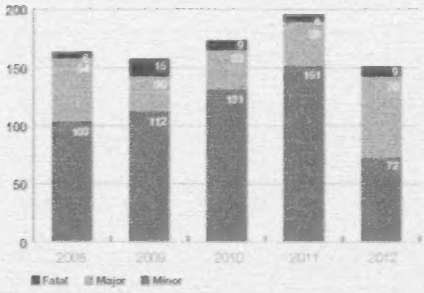


FIGURE 4: Injuries Reported 2008-2012



Note 1: Injuries associated with incidents *UNDER INVESTIGATION* are excluded.

TABLE 2: Fatal and Major Injuries in 2012

FATAL		MAJOR	
Qty	Type	Qty	Type
5	Fatalities from industrial explosions and fires	43	Explosion and fire-related injuries (burns, smoke inhalation, fractures, lacerations)
3	Fatalities from fires where electrical equipment was suspected to have caused the incident	10	Carbon monoxide poisoning
1	Electrical shock	9	Fractures/multiple fractures, dislocations and concussions
		7	Soft tissue injuries, sprains and strains
		1	Electrical shock

In 2012, the numbers of fatal and major injuries reported to BC Safety Authority increased primarily as a result of two sawmill explosions. These two incidents caused a total of four fatalities and 42 major injuries. Other fatalities and major injuries were primarily a result of fires and carbon monoxide exposure, which is consistent with previous years. Slips, trips and falls from regulated equipment also resulted with many injuries to passengers and riders. More information about injuries resulting from incidents is available in Appendix A.

ASSESSMENTS OF REGULATED WORK

BC Safety Authority assesses regulated activities and equipment by sampling permitted work. Where permitted work is completed by licenced businesses and qualified persons, compliance declarations are submitted and assessment effort is focused on equipment that carries a greater risk of incident or injury.

FIGURE 5:
New Installation Permits 2008-2012

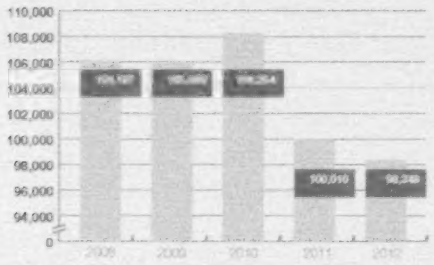


FIGURE 6:
Operating Permits 2008-2012

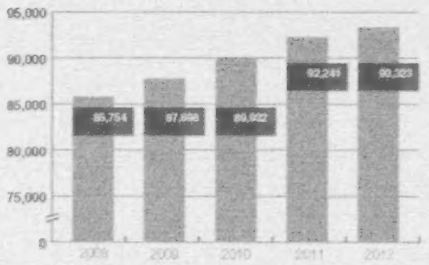


FIGURE 7:
Physical Assessments 2008-2012

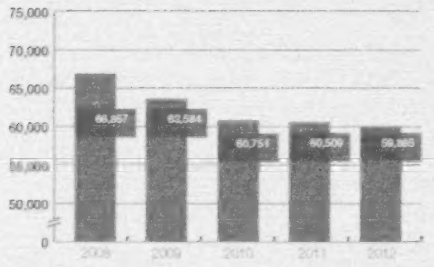


FIGURE 8:
Non-Compliances 2008-2012

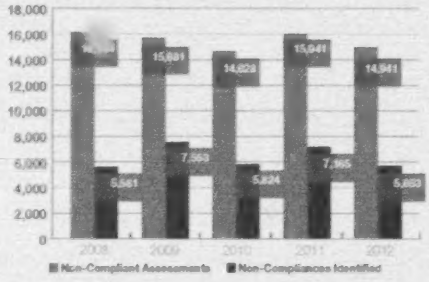


TABLE 3: Permitted Work, Physical Assessments Completed and Non-Compliances Recorded in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER RopeWAYS	RAILWAYS	TOTAL
New Installation Permits (Note 1)	26	1,061	60,388	931	35,934	8	N/A	98,348
Operating Permits (Note 2)	463	59,512	8,057	23,110	1,857	244	80	93,323
Physical Assessments (Note 3)	418	10,025	33,274	2,953	12,892	234	89	59,885
Non-Compliant Assessments (Note 4)	N/A	1537	9,183	N/A	4,221	N/A	N/A	14,941
Non-Compliances Identified During Assessment (Note 5)	1,169	N/A	N/A	3,546	N/A	767	171	5,653

Note 1: New installation permits include permits issued new in 2012 only. This number does not include permits that were issued in previous years and may have been assessed in 2012.
Note 2: Operating permits includes new permits issued in 2012 plus permits that were issued in previous years and were active in 2012.
Note 3: Physical assessments include all physical assessment activity performed by BC Safety Authority officers in 2012 for all new or active installation and operating permits.
Note 4: Physical assessments where one or more non-compliances were identified.
Note 5: Number of non-compliances identified during physical assessments.

MANAGEMENT DISCUSSION

BC Safety Authority conducted independent investigations of two catastrophic sawmill explosions in 2012. Teams from BC Safety Authority, RCMP, BC Coroner's Service, WorkSafeBC, and the Office of the Fire Commissioner worked together, shared information and communicated with affected stakeholders. These investigations contributed significantly to the advancement of the understanding of safety risks, particularly regarding the operation of regulated electrical, gas, and boiler & pressure vessel equipment in hazardous combustible dust locations. BC Safety Authority issued two Safety Orders and is seeking stakeholder input on a third. These incidents have focused the forest products industry, labour, and communities on implementing changes to alter, remove and/or better mitigate risks associated with equipment in hazardous combustible dust locations.

Technical staff at BC Safety Authority continued to develop systematic processes for collecting information about 'as-found' risk conditions during physical inspections. Importantly, this program is intended to advance the understanding of current safety risks; 'as-found' by Safety Officers during the approximately 60,000 inspections conducted annually. Information gathered is also expected to support in the validation of IT system generated Risk Assessment Program (RAP) scores, and the substantiation of appropriate enforcement activity. Rollout of this program will commence in 2013.

STAKEHOLDER ENGAGEMENT

BC Safety Authority's objective to promote stakeholder participation in the safety system requires having stakeholder engagement practices that create value, clarify accountability and support learning and innovation. Engagement can take a number of means, from ongoing standing engagement processes to specific consultations on proposed technical safety, regulatory or service delivery changes. These engagement processes help BC Safety Authority better understand stakeholder needs and expectations on any given safety issue as well as help manage stakeholder expectations in relation to those issues.

With the objective of managing potential safety risks, BC Safety Authority and its stakeholders addressed the following safety issues:

- Impact of CSA B355-09 Code adoption on people with physical disabilities, with an outcome of having the clause restricting access to lifts removed as a recommendation.
- A draft Directive on acceptable power plant experience for applying for a third class power engineer certificate of qualification.

With the objective of achieving fairness and good business practices, BC Safety Authority and its stakeholders addressed the following service delivery issues:

- General fee increase to the majority of Safety Programs.
- Review and dialogue on fee structure in the Electrical and Elevating Devices Safety Programs.

With the objective of improving its standing engagement processes, BC Safety Authority and its stakeholders addressed the following:

- A need to continuously improve on the efficiency and effectiveness of the Technology Advisory Committees by developing a Improvement Plan based upon the results of the annual performance review by committee members.
- Improving its collaborative relationship with local governments with delegated authority for electrical and gas safety by pursuing, through the Safety Standards Administrators' Group, common approaches to sharing information on incidents, enforcement and tracking of poorly performing contractors.

TABLE 4: Stakeholder Engagement Activities in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER ROPEWAYS	RAILWAYS	TOTAL
Technology Advisory Committee meetings	1 [Note 1]	4	4	3	3	1	N/A	16
Working groups	N/A	3	6	2	6	1	N/A	18
Safety Standards Administrators' Group meetings	N/A	N/A	6	N/A	5	N/A	N/A	11
As needed consultations	1	3	4	4	2	1	1	16
Associations and National Codes & Standards committees [Note 2]	2	5	5	10	8	3	2	35

Note 1: A planning meeting with the proposed Amusement Devices Technology Advisory Committee members was held in November 2012 to discuss future direction for this committee.
Note 2: A listing of Associations and National Codes & Standards Committees are contained in Appendix D.

EDUCATION

BC Safety Authority conducts regular meetings with licence and certificate holders as well as industry stakeholders to share knowledge of hazards, best practices and industry regulation and standard changes. In the Electrical and Gas industry sectors, these presentations and discussions are called Tech Talks and in Railways they are called Town Hall meetings. BC Safety Authority also manages a number of education projects aimed at increasing awareness about specific hazards. The following table summarizes our education program activities and results in 2012.

TABLE 5: Education Program Activities in 2012 (see Note 1 below)

	ELECTRICAL TECH TALKS	GAS CARBON MONOXIDE	GAS TECH TALKS	ELECTRICAL THINK PERMIT	ROPEWAYS SAFE RIDE	RAILWAYS RESPECT	RAILWAYS TOWN HALLS	TOTAL
Direct Reach	2,890	8,203	676	16	1,400	274	35	13,494
Indirect Reach		1,533,314		9,908				1,543,222
Activities	75	23	13	7	2	9	3	132
New Development	4		1	3		1		9
Media		4				1		5
Collaborations				164	2	2		168
Client Satisfaction	93%		91%					

Note 1: definitions and descriptions for education terms (i.e., direct reach, indirect reach, etc.) is available in Appendix E.

In 2012, education program development and delivery focused on deepening existing connections, broadening program reach, and ensuring satisfaction with the quality of content provided. This was accomplished in several ways:

- Deepened connections between BC Safety Authority and client groups through continuing the Tech Talks program in both Electrical and Gas technologies.
- Broadened the reach of BC Safety Authority public education messages (e.g. used Facebook ads targeted to populations at risk of carbon monoxide poisoning).

- Continued programmatic development of new content in existing programs.
- Increased collaboration with organizations closely linked to BC Safety Authority's target audiences for public awareness messages (e.g. RONA and municipal government offices with Think Permit messages; ski resorts with Have a Safe Ride messages; local schools with Railways RESPECT messages).
- Generated high levels of client satisfaction with content and delivery of client education materials.

Access to BCSA services was also improved in 2012. To ensure that clients had a convenient and accessible system to sign up for Tech Talks sessions, a web-based registration system was developed and implemented. Linked to the web-based events notification system, it allowed clients to register themselves and a limited number of guests in advertised Tech Talks sessions and to access handout materials.

MEDIA RELATIONS

BC Safety Authority's media relations activities include the issuance of proactive media releases to: warn of specific hazards, advise the public of steps they can take to reduce their risk of injury, and provide comment and context to safety issues that are of interest to the media. In 2012, BC Safety Authority produced media releases relating to each industry sector.

TABLE 6: Media Relations Summary in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER ROPEWAYS	RAILWAYS
Media releases issued or interviews conducted	2	2	10	3	11	2	2

Note: BC Safety Authority issued two media releases summarizing enforcement actions taken in all regulated industry sectors. Details of each media release are provided in Appendix F.

LICENSING AND CERTIFICATION

BC Safety Authority issues licences to businesses that perform regulated work. BC Safety Authority also issues Certificates of Qualification to individuals that demonstrate a required level of knowledge and experience. Licensing and certification sets minimum standards of knowledge and capability regarding the completion of regulated work.

TABLE 7: New Licences and Certificates of Qualification Issued in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER ROPEWAYS	RAILWAYS	TOTAL
New Licences	18	113	397	7	305	2		842
New Certificates of Qualification	0	798	553	144	1032	2	Note 1	2,529

Note 1: The *Railway Safety Act* does not define the use of Licences or Certificates of Qualification.

ENFORCEMENT

BC Safety Authority enforces compliance with the *Safety Standards Act* where individuals have resisted attempts to make their work or equipment compliant and/or have chosen to operate outside the safety system. Safety Officers work with industry to establish compliance and address unsafe conditions. However, where those efforts do not achieve results, BC Safety Authority may issue a Compliance Order and eventually a Monetary Penalty or Discipline Order in accordance with the Act. A listing of all enforcement actions taken by BC Safety Authority is included in Appendices B1 and B2.

TABLE 8: Compliance Orders, Monetary Penalties and Disciplinary Orders Issued in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER ROPEWAYS	RAILWAYS	TOTAL
Compliance Orders	1	1	78	1	41	0		122
Monetary Penalties	0	0	3	2	2	0	Note 1	7
Discipline Orders	0	0	0	0	0	0		0

Note 1: Compliance Orders, Monetary Penalties and Disciplinary Orders are not defined in the *Railway Safety Act*.

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority uses certain regulatory instruments to assist with the administration of the *Safety Standards Act* and the *Railway Safety Act*. Safety Orders are issued to prevent or reduce the risk of personal injury or damage to property. Directives are instruments that clarify or provide new interpretation of a regulation or code. Compliance with Safety Orders and Directives is mandatory and enforceable by BC Safety Authority. Information Bulletins provide helpful information and clarification on existing regulations or codes. BC Safety Authority also works with the Government of British Columbia to amend the *Acts* and *Regulations*. Amendments have been initiated by BC Safety Authority through a recommendation for amendment submission to the Government of BC.

TABLE 9: Regulatory Instruments and Amendments in 2012

	AMUSEMENT DEVICES	BOILERS, PV, REFRIGERATION	ELECTRICAL	ELEVATING DEVICES	GAS	PASSENGER ROPEWAYS	RAILWAYS	TOTAL
Safety Orders	0	0	3	1	2	3		9
Directives	0	4	2	1	6	0	Note 1	13
Bulletins	0	0	5	0	3	1		9
Recommendations for Amendment	0	1	1	2	0	0	1	5
Amendments	0	0	1	0	0	0	0	1

Note 1: The *Railway Safety Act* does not define the use of Safety Orders, Directives or Bulletins.

CODE AND STANDARD DEVELOPMENT

BC Safety Authority employees participate in and lead many technical code and standard developments. Participation assures that challenges facing BC industries are presented and considered, and brings BC Safety Authority's focus on risk to the discussion. BC Safety Authority collaborated with the government of BC to adopt the 2012 edition of the Canadian Electrical Code, Part 1, improving safety standards and fostering harmonization across Canada and internationally. A listing of all industry associations and national codes & standards committees in which BC Safety Authority participated is included in Appendix D.

ALTERNATIVE SAFETY APPROACHES

An Alternative Safety Approach (ASA) enables an owner or primary operator to address the undertaking of particular regulated work or the use of a particular regulated product through an alternate approach consistent with the safety objectives of the *Safety Standards Act*, instead of through traditional prescriptive requirements. An ASA is required to address the specific risks that may be associated with the regulated work or product and to demonstrate how the alternative approach meets or exceeds the objectives of the Act.

The benefit of an ASA is that it allows the proponent to use the most suitable methods for efficient and safe operation of the specific business. Where innovation has outpaced the development of standards and/or regulations, industry can now integrate new technology and new approaches through an effective management system. The introduction of a complete safety system with formal audit and investigation processes, rather than individual regulatory requirements with traditional inspection processes, allows for more complete management of safety risks.

ASAs are a new, innovative regulatory approach, offering a valued service that fully aligns with our 10-Year Strategy and business plan. ASAs are being developed with owners and operators in the oil and gas, propane, bio-energy and institutional sectors.

MANAGEMENT DISCUSSION

BC Safety Authority organizes its risk management activities within the framework of an Accident Prevention Model comprising of four pillars; Education and Outreach, Assessment, Enforcement, and Research. The outputs of prevention activities in 2012 are summarized above.

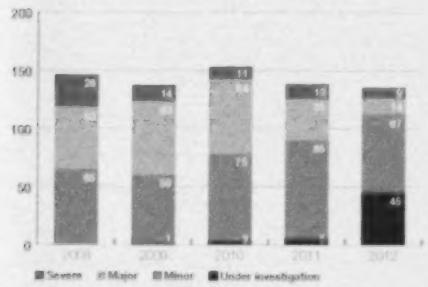
Since 2011, staff at BC Safety Authority have been focused on implementing a new safety management information system. Applications to manage certifications and licences went 'live' in 2012, and the system for managing the bulk of permitting transactions will be implemented in Q2-2013. The new system will ultimately deliver extensive improvements in our clients' online access functionality, making it easier for duty holders (certified workers, licensed contractors, and equipment owners) to attach to the safety system. It will also enable geospatial mapping, cross jurisdictional information sharing, and augment capabilities for querying data. These changes will lift BC Safety Authority's capacity to uncover meaningful insights about safety risks and appreciably improve the effectiveness of risk management systems and initiatives.

"Where innovation has outpaced the development of standards and/or regulations, industry can now integrate new technology and new approaches through an effective management system using Alternative Safety Approaches."

Understanding Electrical Safety Risks

In the Electrical Safety Program at BC Safety Authority, we oversee the safety of electrical systems across British Columbia in accordance with the *Safety Standards Act* and the *Electrical Safety Regulation*. We deliver electrical safety services for approximately 50% of the provincial permitting activity. Municipalities that have separate administrative agreements with the Province are identified in Appendix G.

FIGURE 9:
Electrical Incident Reports 2008-2012



INCIDENTS

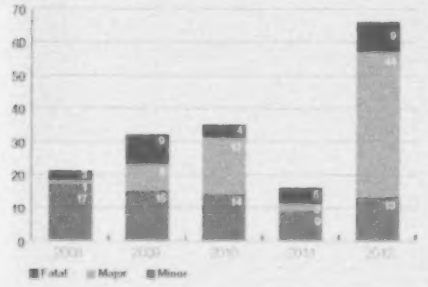
The following summarizes incidents reported to BC Safety Authority involving electrical (EL) equipment.

TABLE 10: Electrical Severe and Major Incidents in 2012

RATING	QTY.	DESCRIPTION
Severe	5	Explosions and/or fires at non-residential facilities where electrical equipment was suspected to be involved
	3	Residential fires where electrical equipment was suspected to be involved
	1	Electrical shock
Major	11	Residential fires where electrical equipment was suspected to be involved
	2	Explosion or fire at an industrial facility
	1	Electrical shock

There were no significant changes to the number and type of incidents reported to BC Safety Authority in 2012 as compared to previous years. Of the 67 *MINOR* incidents, most were fires where electrical equipment was suspected to have been involved or incidents of a worker receiving an electrical shock as a result of unintended contact with live electrical components. A number of *MINOR* incidents were also identified as being related to the replacement of residential meters with 'smart meters'. A summary of incidents is included in Appendix A.

FIGURE 10:
Electrical Injuries Reported 2008-2012



INJURIES

Injuries reported as a result of electrical incidents are summarized below.

TABLE 11: Fatal and Major Injuries in 2012

RATING	QTY.	DESCRIPTION
Fatal	5	Fatalities resulted from industrial saw mill explosions and fires
	3	Fatalities resulted from residential fires where electrical equipment was suspected to have caused the incident
	1	Fatal electrical shock
Major	43	Explosion and fire-related injuries (burns, smoke inhalation, fractures, lacerations)
	1	Electrical shock

Two sawmill explosions account for four *FATAL* and 42 *MAJOR* injuries recorded in 2012. Tragic incidents of similar scope have not been recorded in past years. BC Safety Authority is working with industry, other regulatory organizations and standards associations to improve sawmill explosion hazard identification and management to reduce the risk of similar occurrences. *MINOR* injuries were predominantly related to electrical shocks received from unintentional contact with live electrical components.

ASSESSMENTS OF REGULATED WORK

Electrical Safety Officers assess new installations as well as operating equipment as part of regular maintenance. Non-compliances are recorded when work does not conform to the applicable regulation.

FIGURE 11:
EL Installation Permits

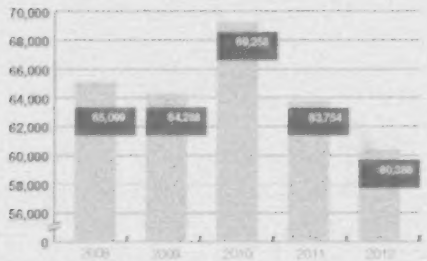


FIGURE 12:
EL Operating Permits

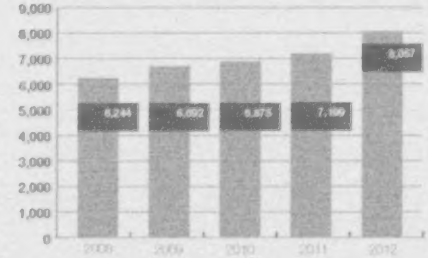


FIGURE 13:
EL Physical Assessments

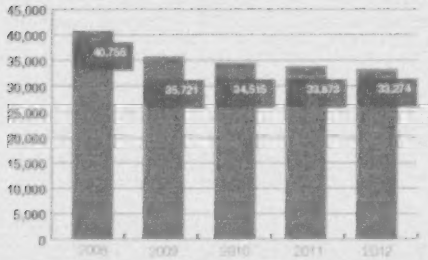
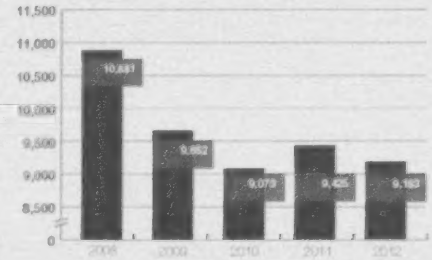


FIGURE 14:
EL Non-Compliant Assessments



Each inspection request is assessed by safety officers, and inspections are prioritized according to various factors. Risk is one of the primary considerations for prioritizing inspections. The Risk Assessment Program (RAP) employs both analytical and judgment functions to assess risks and to improve our understanding of risk. The RAP score is one of the risk assessment tools that provides safety officers with a preliminary risk assessment for each inspection request. The RAP score is generated through an algorithm that utilizes historical data, such as past history of compliance, scope of electrical work, and type of inspection. The resulting RAP score provides safety officers with a consistent and quantifiable result that can be used during their assessments to prioritize the need for site inspections. Safety officers carried out more than 33,000 physical inspections in 2012. Of those inspections, 72% were found to be fully compliant, and 28% were cited as non-compliant. While the majority of non-compliances were not considered high risk, safety officers identified 395 high risk hazards during their physical inspections.

The greatest number of administrative non-compliances was attributed to contractors who did not have the status of their installations checked regularly by their Field Safety Representatives. Construction of new, or upgrades to existing, electrical services were the highest ranked categories for the number of technical non-compliances identified during physical inspections of electrical work.

Managing Electrical Safety Risks

TECH TALKS AND TOWN HALL MEETINGS

BC Safety Authority conducted 75 electrical Tech Talks throughout the province in 2012, covering eight topics and reaching 2890 stakeholders. More details of each Tech Talk can be found in Appendix E.

TABLE 12: Electrical Tech Talks Conducted in 2012

TOPIC	QTY. OF PARTICIPANTS
2012 Electrical Code Changes	2,393
101 Things Every Electrician Should Know	23
Arc Flash	175
Barn Wiring	24
Disposal or Sale of Manufactured Homes	197
Generators	16
Low Voltage Services Part I	38
Low Voltage Services Part 2	24

ENFORCEMENT

In 2012, 78 Compliance Orders and three monetary penalties were issued in the electrical sector. Details of each Compliance Order and Monetary Penalty issued are included in Appendices B1 and B2.

TABLE 13: Electrical Enforcement Actions Taken in 2012

TYPE	DOCUMENT	QTY. ISSUED
Compliance Order	Expired Permit	8
	No contractor's licence	7
	No Permit	17
	No valid BC certificate of qualifications	15
	Outstanding non - compliance(s)	12
	Performing regulated work beyond scope of qualifications	1
	Sale of uncertified equipment	2
	Unsafe tampering or use of regulated equipment	1
	Unsafe use of regulated equipment	1
	Use of unqualified workers	5
	No contractor's license	6
	Expired contractor's license	2
	Provide Records	1
Monetary Penalty	No valid BC certificate of qualifications	1
	Outstanding non - compliance(s)	2

LICENSING AND CERTIFICATION

BC Safety Authority requires that electrical equipment is installed, operated and maintained by qualified and knowledgeable professionals.

TABLE 14: New Electrical Licences and Certificates of Qualification Issued in 2012

TYPE	DOCUMENT	QTY.
New Licence	Contractor Licence	397
New Certificate of Qualification	Field Safety Representative, Class A	62
	Field Safety Representative, Class B3	19
	Field Safety Representative, Class C	3
	Field Safety Representative, Full Entertainment	7
	Field Safety Representative, Low Energy Systems	43
	Field Safety Representative, Power Line Technician	3
	Field Safety Representative, Refrigeration Mechanic	57
	Field Safety Representative, Security Alarms Installer	27
	Field Safety Representative, Solar Photovoltaic Systems	1
	Field Safety Representative, Underground Raceway Installer	28

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority issues Safety Orders, Directives and Information Bulletins to stop unsafe activity and provide clarification of regulatory requirements and interpretations. Additional details can be found in Appendix C or at www.safetyauthority.ca.

TABLE 15: Electrical Regulatory Instruments Issued in 2012

TYPE	DOC NO.	TITLE/DESCRIPTION
Safety Order	SO-EL 2012-01	Electrical Equipment in Sawmills
Safety Order	SO-EL 2012-02	Sicamous Flood Hazard June 2012
Safety Order	SO-EL 2012-03	Electrical Equipment Located in Wood Pellet Manufacturing Plants
Directive	D-EL 2012-01	BC Electrical Code Section 26 (Installation Of Electrical Equipment)
Directive	D-EL 2012-02	BC Electrical Code Section 6 (Services and Service Equipment)
Bulletin	IB-EL 2012-01	2012 BC Electrical Code Adoption
Bulletin	IB-EL 2012-02	BC Hydro Notification of Changes
Bulletin	IB-EL 2012-03	Services and Services Equipment
Bulletin	IB-EL 2012-04	Section 4 – Conductors
Bulletin	IB-EL 2012-05	Section 2 - General Rules
Recommendation and Regulatory Amendment	N/A	Adoption of the 2012 edition of the Canadian Electrical Code Part I

MEDIA RELATIONS

BC Safety Authority took the following media relations actions in 2012 related to electrical safety. A listing of all media relations can be found in Appendix F.

TABLE 16: Electrical media releations in 2012

ACTIONS	DESCRIPTION
1 release	Enforcement actions taken in all regulated industry sectors including Electrical for the year 2011
1 release	Enforcement actions taken in all regulated industry sectors including Electrical for the period January-June 2012
4 releases	Electrical appliance safety during floods
2 media interviews	A Safety Manager explained how electrical safety was enhanced with the application for recognition of training for limited scope electrical workers from the Applied Science Technologists and Technicians of BC
1 media teleconference	A Safety Manager provided comment and context regarding a 2011 report on a sawmill incident during a teleconference discussion with members of the media.
1 release	Safety Order for sawmills

STAKEHOLDER ENGAGEMENT

The 2012 edition of the Canadian Electrical Code was adopted with stakeholder consultation. Following the 3% fee increase consulted on in Q1-Q2, stakeholders were also invited to consult on fee structure changes within this 3% increase, to help simplify the fee calculations and align them with the amount of work required to assess the equipment. Stakeholder feedback was also gathered on the impacts of BC Safety Authority's new IT system.

For the Safety Standards Administrators' Group, focus has been on developing common or shared approaches to incident reporting, dealing with poorly performing contractors and enforcement.

Various code interpretations have been discussed to help bring consistency across the municipalities that regulate electrical safety.

The Electrical Technology Advisory Committee met four times in 2012, with six Working Groups dedicated to the following issues:

- Canadian Electrical Code 2012 adoption (completed in 2011): The 2012 edition of the Canadian Electrical Code was adopted into the Electrical Safety Regulation with BC amendments. Some Working Group members did not feel that their recommended amendments to Table 4 (ampacities) were reflected in BC Safety Authority's final decision.
- Stray voltage mitigation for farms with livestock (completed): The Working Group conducted research on how to mitigate the negative effects of stray voltage on livestock, but decided to close the subject as they determined that adequate regulations and processes were in place to mitigate stray voltage levels.
- CSA Z462 Code/Electrical Safety Regulation Section 18 (in progress): The Working Group is reviewing sections in CSA Z462 Code and Electrical Safety Regulation Section 18 regarding installation of security alarm systems to ensure they meet the intent of what was in the Private Investigators and Security Agencies Act, repealed in September 2008.
- Electrical worker lockout and safety (in progress): Stemmed from industry concerns regarding electrical workers working on energized equipment resulting in flashover and contact injuries. The Working Group is conducting an interpretation of when, where and how to apply current rules and regulations by both BC Safety Authority and WorkSafeBC. A draft proposal based on Rule 2.0.3.0.4 of the Canadian Electrical Code on this issue is being written.
- Equipment installation in customer-owned buildings (planned): The Working Group will review construction standards initially drafted by BC Hydro for installing electrical and utility equipment on private property, to ensure compliance with various codes and by-laws.
- Review of transformers requiring larger service fault ratings acceptable for fault current (planned): The scope of the Working Group is yet to be determined.

SAFETY MANAGER'S DISCUSSION

2012 saw the adoption of the latest version of the Canadian Electrical Code, Part 1. The new edition of the Canadian Electrical Code contained approximately 300 changes, over the previous edition. A large number of the changes were made to harmonize the Canadian code with international standards. This is part of ongoing work at the national level to improve compatibility of products in the international market place, and to provide standards for emerging technologies, such as electric vehicles. The new code was amended and adopted by Ministerial Order, on July 10th, 2012 and became effective on October 1st, 2012.

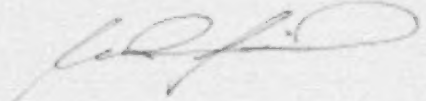
In 2012, we continued to focus on assessing risks related to the performance of electrical work, and operation of electrical equipment at existing facilities. The number of non-compliances per physical inspection remains relatively unchanged over 2011 numbers.

We continued to increase our focus on electrical risks at existing facilities. Explosions and fires at four wood processing facilities in British Columbia resulted in fatalities and serious injuries to workers. Previous incidents, in which wood dust had been ignited by electrical equipment, had also been identified. Although the causes of the two fatal incidents have not been identified, two Safety Orders were issued, aimed at minimizing the risk of fire or explosion related to regulated electrical equipment as a potential combustion or ignition source in wood processing operations. We also continued to increase awareness of electrical operating permit requirements, through a program that educates facility owners. This program resulted in an increase of more than 850 electrical operating permits in 2012.

Throughout 2012, we continued to engage stakeholders in consultation on implementing a regulatory option for recognizing another body's training program. This recognizes training for applied science technologists and technicians who perform electrical work within a narrow scope, and in specialized fields. Recognition of this training will allow technologists and technicians to perform electrical work but only within existing scopes and fields of practice, and restricts them from performing installation work. This creates a significant enhancement to safety because, although many of these practitioners have been doing this work for many years, there has been no formal process for recognizing them as being qualified under the *Safety Standards Act*. Once development of the program is completed, it will build upon existing skills, training, and knowledge about electrical work; this will be accomplished through additional training and practical experience. Upon completion of this training, individuals will have received training and practical experience that is equivalent to training received by an apprentice electrician for that scope of work. A certificate, issued by the Applied Science Technologists and Technicians Association of BC, will identify that an individual has completed a recognized training program. Recognition of this training does not affect the ability of fully qualified electricians to perform this work. The scope of work covered under this program will be performed under permits, where it will be supervised by a Field Safety Representative.

Although not part of the BC Safety Authority's technical evaluation, which focuses primarily on safety, we believe that this program also supports calls, from various industry sectors, for improvement of training for technical and skilled workers. Progress on development of the training programs will continue into 2013, and we continue to encourage industry stakeholders to participate in this process, in order to ensure that all safety concerns are being addressed.

In 2013, we will continue to educate industry stakeholders about electrical operating permit requirements, the need for facility owners to implement effective electrical safety programs that continuously assess, and re-assess, the changing conditions and needs at their facilities, and the need for owners to demonstrate their due diligence regarding electrical safety at their facilities.



Ulrich Janisch
Acting Electrical Safety Manager

Understanding Boilers, Pressure Vessels and Refrigeration Safety Risks

In the Boilers, Pressure Vessels and Refrigeration (BPVR) Safety Program at BC Safety Authority, we are responsible for overseeing the design, construction, installation and operation of boilers, pressure vessels and refrigeration plants throughout British Columbia in accordance with the *Safety Standards Act* and the *Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation*.

INCIDENTS

The following summarizes incidents reported to BC Safety Authority involving regulated boilers, pressure vessels and/or refrigeration (BPVR) equipment.

FIGURE 15:
BPVR Incident Reports 2007-2012

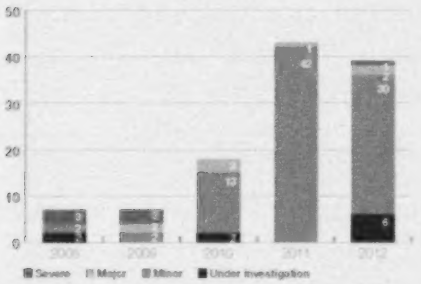


TABLE 17: BPVR Severe and Major Incidents 2012

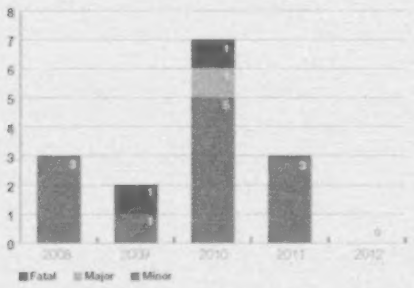
RATING	QTY	DESCRIPTION
Severe	1	Explosions occurred in a recovery boiler.
Major	1	Pipe failure
	1	Controls failed to shut down the fuel system

There were no significant changes to the number and type of incidents reported to BC Safety Authority in 2012 as compared to previous years. Of the 30 MINOR incidents, most were leaks, cracks and operational malfunctions. There were two reports of refrigerant (ammonia) leaks. A summary of incidents is included in Appendix A.

INJURIES

There were no injuries reported as a result of BPVR incidents in 2012.

FIGURE 16:
Injuries Reported 2008-2012



ASSESSMENTS OF REGULATED WORK

BPVR Safety Officers assess new installations as well as operating equipment as part of regular maintenance. Non-compliances are communicated to equipment operators by Certificates of Inspection when work is assessed as not conforming to the applicable regulation.

FIGURE 17: BPVR Installation Permits

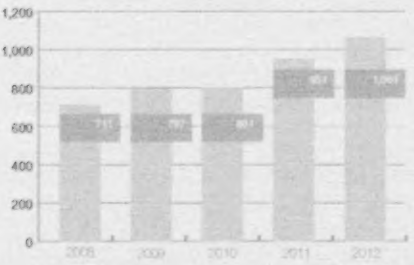


FIGURE 18: BPVR Operating Permits

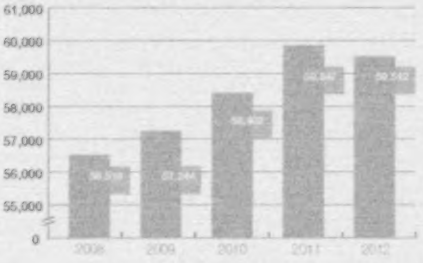


FIGURE 19: BPV Physical Assessments

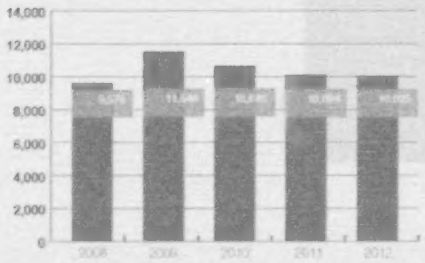
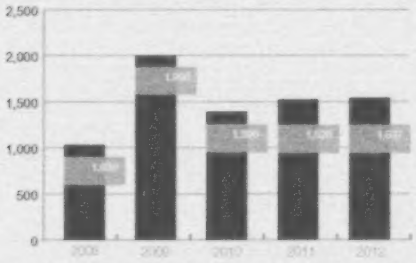


FIGURE 20: BPVR Rejected Units



Note: The Boilers, Pressure Vessels and Refrigeration Safety Program records the number of rejected units resulting from physical assessments. A rejected unit may have one or more non-compliances that require correction.

The Boilers, Pressure Vessels and Refrigeration Safety Program conducts assessments on both newly installed boilers, pressure vessels and refrigeration plants as well as periodic assessments throughout the operating life of the equipment after it has passed its installation inspection. The periodic assessment schedule for operating equipment is established through a risk assessment program which takes into consideration the type of equipment, its size, where it is located and the last assessment date to establish which equipment is high risk. High risk equipment is scheduled for assessment and evaluation for safe operation. The number of physical assessments for 2012 is a total of both new installation and periodic operating assessments. Approximately 30% of the over 10,000 assessments were for new installations

Overall 15% of the 10,025 equipment assessments in 2012 found non-compliances with regulatory requirements or evidence of corrosion, erosion, cracking or other deterioration which required correction and resulted in a rejected status for the assessment. The rate of rejected assessments remained constant from 2011 to 2012.

Managing Boilers, Pressure Vessels and Refrigeration Safety Risks

ENFORCEMENT

In 2012, one Compliance Order was issued to an individual after an assessment for failing to correct outstanding non-compliances with respect to regulated work. Details of this Compliance Order are contained in Appendix B1.

LICENSING AND CERTIFICATION

BC Safety Authority requires that BPVR equipment is installed, operated and maintained by qualified and knowledgeable professionals. In 2012, 113 new contractor licences and 798 certificates of qualification were issued to individuals that demonstrated the required capabilities to produce safe work.

TABLE 18: New BPVR Licences and Certificates of Qualification Issued in 2012

TYPE	DOCUMENT	QTY ISSUED
Licence	Contractor Licence	113
Certificate of Qualification	1st Class Power Engineer	10
	2nd Class Power Engineer	50
	3rd Class Power Engineer	119
	4th Class Power Engineer	308
	5th Class Power Engineer	38
	Ice Facility Operator	61
	Refrigeration Operator	49
	Boiler Safety Awareness	51
	Refrigeration Safety Awareness	69

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority issues Safety Orders, Directives and Information Bulletins to stop unsafe activity and provide clarification of regulatory requirements and interpretations. Additional details can be found in Appendix C or at www.safetyauthority.ca.

TABLE 19: BPV Regulatory Instruments Issued in 2012

TYPE	DOC NO.	TITLE/DESCRIPTION
Directive	D-BP 2012-01	Recognition to Administer Welder Qualification Tests
Directive	D-BP 2011-01 Revision 1	Inspection Requirements for Piping Systems and Piping Components
Directive	D-BP 2012-02	Electrical and Gas work carried out by Power Engineers
Directive	D-BP 2012-03	Temporary absence of Chief Engineer
Recommendation for Amendment	N/A	Adoption of new editions of one CSA code and two ASME manufacturing codes

STAKEHOLDER ENGAGEMENT

Stakeholders from the boiler, pressure vessel and refrigeration industry were consulted on matters of fee increases and the impacts of BC Safety Authority's new IT system. Chief engineers of power plants also participated in a consultation on the impacts of a Directive for application requirements for a third class power engineering certificate of qualifications.

The Boiler Technology Advisory Committee met four times in 2012, with three Working Groups dedicated to the following issues:

- Low pressure steam boilers (completed in 2011): BC Safety Authority is planning on creating Tech Talks for educating operators of low pressure steam boilers, which could include some of the information from this Working Group.
- Regulation review (planned): This Working Group will identify issues in the boiler, pressure vessel and refrigeration technologies and provide an overall review of the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation and other relevant regulations.
- Task analysis of fourth class power engineers (planned): This Working Group will identify tasks and equipment that fourth class power engineers would work on for operating experience that would be considered acceptable towards applying for a third class power engineering certificate of qualification.

SAFETY MANAGER'S DISCUSSION

There was a drop in the number of incidents reported in the Boiler, Pressure Vessel and Refrigeration Safety Program in 2012 compared to 2011. However the difference was minimal and the incident statistics have remained consistent over two years. There were no injuries resulting from incidents in 2012. This is an improvement over 2011 when three minor incidents were reported and a great improvement compared to 2010 when six injuries were reported including one fatality and one major injury.

The majority of incidents were reports of minor repairs to boilers such as tube replacements and leaks. The assessment of arenas and other recreational ice facilities to ensure the refrigeration plants were operated safely was prioritized by Safety Officers in 2011. This initiative to reduce the number of refrigerant leaks was continued in 2012. There was a reduction of refrigeration plant incidents as only two ammonia leaks reported in 2012 compared to five in 2011. These refrigerant leaks occurred in refrigeration plants used in industrial occupancies not in recreational ice facilities.

The Boilers, Pressure Vessels and Refrigeration Safety Program assisted with the approval of a number of pressure vessel integrity management programs of companies which made applications with Alternative Safety Approach (ASA) program. The ASA program allows clients a variance from prescriptive regulation to implement alternative procedures reflecting best practices for safety while maximizing the efficiency of their operations. While a majority of the applicants are from the oil and gas industry, ASA applications have been processed from clients across the spectrum of regulated industries including the forestry and institutional sectors.

A review of the Boilers, Pressure Vessels and Refrigeration Safety Program to identify sustainable program and service delivery alternatives, which meet BC Safety Authority's needs to understand risk, transfer knowledge, and engage every stakeholder to achieve desired safety outcomes was carried out in 2012. This review found that opportunities exist to improve the program and enable BC Safety Authority to leverage its existing strengths, and implement initiatives aligned with the company's 10-Year Strategy and its Accident Prevention Model. The initiatives recommended such as establishing mandatory maintenance requirements for plants not under the supervision of a power engineer, developing contractor audit programs, creation of an online power engineer registry, online declarations for contractors and improvement of the safety officer training program offer practical means for achieving BC Safety Authority's strategic goals related to sustainability, safety, clients and people.

E. J. Hurd

Ed Hurd, P. Eng.
Boilers, Pressure Vessels and Refrigeration Safety Manager

Understanding Gas Safety Risks

In the Gas Safety Program at BC Safety Authority, we are responsible for overseeing industrial and commercial use of natural gas, propane, digester gas, manufactured gas, liquefied petroleum gas, landfill gas and hydrogen throughout British Columbia in accordance with the *Safety Standards Act* and the *Gas Safety Regulation*. We deliver gas safety services for approximately 1.2 million homes in the province. Municipalities that have separate administrative agreements with the Province to oversee low pressure gas systems and work are identified in Appendix G.

FIGURE 21:
Gas Incident Reports 2008-2012

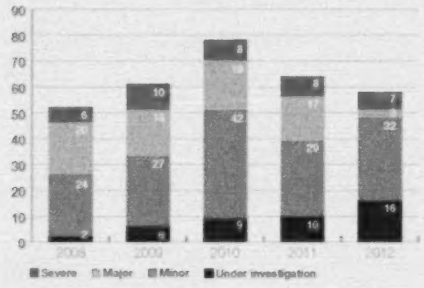
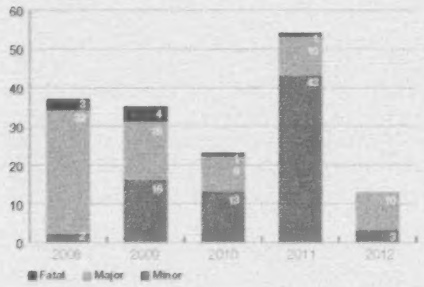


FIGURE 22:
Injuries Reported 2006-2012



INCIDENTS

The following summarizes incidents reported to BC Safety Authority involving regulated gas equipment.

TABLE 20: Gas Severe and Major Incidents in 2012

RATING	QTY.	DESCRIPTION
Severe	4	Explosions and/or fires where gas equipment was suspected to be involved
	3	Carbon monoxide exposure
Major	1	Carbon monoxide exposure
	1	Gas leak from damaged underground gas line
	1	Residential fire where gas equipment was suspected to be involved

There were no significant changes to the number and type of incidents reported to BC Safety Authority in 2012 as compared to previous years. Of the 32 MINOR incidents, most were related to gas leaks, carbon monoxide exposure, fires and damaged gas lines from excavating activity. A summary of incidents is included in Appendix A.

INJURIES

Injuries reported as a result of gas incidents in 2012 are summarized below.

TABLE 21: Major Injuries Reported in 2012

RATING	QTY.	DESCRIPTION
Major	10	Carbon monoxide poisoning/exposure

MAJOR injuries reported in 2012 were all related to carbon monoxide exposure. *MINOR* injuries reported in 2012 included burns from fires and burns from exposure to liquid propane.

ASSESSMENTS OF REGULATED WORK

Gas Safety Officers assess new installations as well as operating equipment as part of regular maintenance. Non-compliances are recorded when work does not conform to the applicable regulation.

FIGURE 23:
Gas Installation Permits

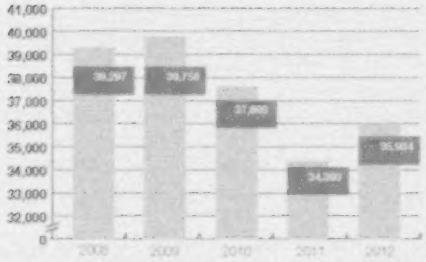


FIGURE 24:
Gas Operating Permits

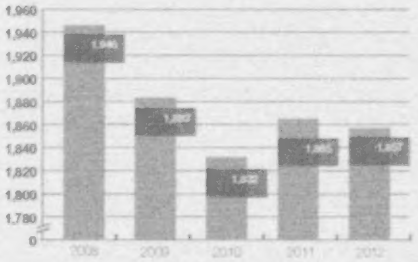


FIGURE 25:
Gas Physical Assessments

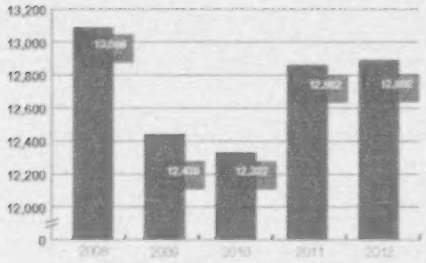
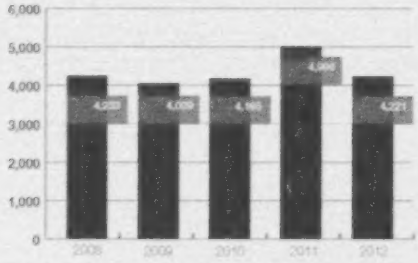


FIGURE 26:
Gas Non-Compliant Assessments



Assessments continue to focus on those installations presenting high-risk attributes. Our Risk Assessment Program (RAP) provides preliminary filtering of installation permit factors. RAP considers factors such as past history of compliance, scope of gas work, type of equipment installed, type of occupancy, and the period since the last assessment was conducted. This provides a guide to the Gas Safety Officer regarding the prioritization of physical assessments. We are also moving forward with recording "as found conditions" when a physical assessment is performed; this will provide a snapshot of the possible consequences of having non-compliances unidentified and uncorrected. The rating will further refine our ability to deploy resources in the most effective and efficient manner.

Managing Gas Safety Risks

EDUCATION

BC Safety Authority continued its outreach program called "Be in the Know About CO", focused on generating awareness of the hazards and causes of carbon monoxide poisoning in BC. More information about this program can be found in the Safety Information and Training section of our website at www.safetyauthority.ca. The 2012 program achievements are summarized in Table 5 and Appendix E.

TECH TALKS AND TOWN HALL MEETINGS

BC Safety Authority conducted 13 gas Tech Talks throughout the province in 2012, covering three topics and reaching 676 stakeholders. More details of each Tech Talk can be found in Appendix E.

TABLE 22: Gas Tech Talks Conducted in 2012

TOPIC	QTY. OF PARTICIPANTS
2010 Gas Code Changes	511
A Conversation about the 2010 Code	58
2012 Gasfitter & Contractor Technical Information Seminar	107

ENFORCEMENT

In 2012, 41 Compliance Orders and two Monetary Penalties were issued in the gas sector. Details of each Compliance Order and Monetary Penalty are included in Appendices B1 and B2.

TABLE 23: Gas Enforcement Actions Taken in 2012

ACTION	CATEGORY	QTY. ISSUED
Compliance Order	Expired certificate of qualification	2
	Failure to address a safety hazard	2
	No contractor's licence	1
	No Permit	12
	No valid BC certificate of qualifications	8
	Outstanding non - compliance(s)	2
	Performing regulated work beyond scope of qualifications	1
	Use of unqualified workers	8
	No contractor's license	3
	Failure to take regulated safety precautions	2
Monetary Penalty	No valid BC certificate of qualifications	2

LICENSING AND CERTIFICATION

BC Safety Authority requires that gas equipment is installed, operated and maintained by qualified and knowledgeable professionals.

TABLE 24: New Gas Licences and Certificates of Qualification Issued in 2012

TYPE	DOCUMENT	QTY. ISSUED
Licence	Contractor Licence	305
Certificate of Qualification	Class A Gas Fitter	74
	Class B Gas Fitter – GP (220kW)	596
	Class B Gas Fitter – GP (220kW) Apprentice	20
	Class B Gas Fitter – 120kW	151
	Class B Gas Fitter – 120kW Apprentice	167
	CNG Automotive Technician	27
	LPG Automotive Technician	16
	CNG/LPG Automotive Technician	11
	Gas Appliance Service Technician	61
	Gas Venting Technician	2
	Gas Utility Technician	37
	RV Gas Installation & Service Technician	15
	Special Purpose Gas Certificate	40

STAKEHOLDER ENGAGEMENT

Stakeholders from the gas technology were consulted on fee increases and the impacts of BC Safety Authority's new IT system. For the Safety Standards Administrators' Group, focus has been on developing common or shared approaches to incident reporting, dealing with poorly performing contractors and enforcement. Local government safety managers have also exchanged information and clarification on various Safety Orders, Directives and/or Information Bulletins that have been distributed over a period of time.

The Gas Technology Advisory Committee met three times in 2012, with six Working Groups:

- Directive D-G5 070330 4 revision (in progress): The Directive was intended to require small utilities to name a qualified individual to do work on the utilities, and to have a sufficient training program; however, the Directive as currently written includes large utilities. The final recommendations to be reviewed at the next committee meeting.
- Gas contractor licensing review (in progress): This Working Group was formed to review whether more requirements should be put in place for applying to become a gas contractor, and considering introducing Field Safety Representatives. The final recommendations to be reviewed at the next committee meeting.
- Regulation review (planned): This Working Group will identify issues in the gas technology and overall review of the Gas Safety Regulation and other relevant regulations.
- Inspection requirements for piping (planned): This Working Group will look to reconcile the various codes for testing of welded gas piping.

- Self-service refueling of propane vehicles (planned): Preliminary discussions must be held with fire commissioners to determine whether unstaffed propane refueling stations pose a risk to public safety.
- Gasfitter apprenticeship review (planned): This Working Group will review and provide recommendations to the BCSA on the gas apprenticeship program. This information will help to prepare BC's delegates to Red Seal Gas Apprenticeship discussions and workshops.

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority issues Safety Orders, Directives and Information Bulletins to stop unsafe activity and provide clarification of regulatory requirements and interpretations. Additional details can be found in Appendix C or at www.safetyauthority.ca.

TABLE 25: Gas Regulatory Instruments Issued in 2012

TYPE	DOC No.	TITLE/DESCRIPTION
Safety Order	SO-GA 2012-01 Revision 1	Installation or Use of Majestic Fireplace – Direct Vent Free Standing Gas Fireplace - Prohibited
Safety Order	SO-GA 2012-01	Installation or Use of Majestic Fireplace – Direct Vent Free Standing Gas Fireplace - Prohibited
Directive	D-GA 2012-01	Replacement Appliance Permit Decals
Directive	D-G5 070628 5 Revision 3	Gas Directive Plastic Venting
Directive	D-GA 2012-02	Requirements for Connection of Fuel Supply to Mobile and Manufactured Housing, and Recreational Vehicles
Directive	D-GA 2012-03	Propane Regulator Installation
Directive	D-GA 2012-04	Propane Vaporizer Approval for BC
Directive	D-GA 2012-05	Propane Regulator Operational Requirements
Bulletin	IB-GA 2012-01	Propane Cylinder Filling Requirements
Bulletin	IB-GA 2012-02 Revision 1	Gas Venting Certificate of Qualification
Bulletin	IB-GA 070322 1 Revision 1	Coleman Furnace Failures

MEDIA RELATIONS

BC Safety Authority took the following media relations actions in 2012 related to gas safety. A listing of all media relations can be found in Appendix F.

TABLE 26: Gas Related Media Relations in 2012

ACTIONS	DESCRIPTION
1 release	Enforcement actions taken in all regulated industry sectors including Gas for the year 2011
1 release	Enforcement actions taken in all regulated industry sectors including Gas for the period January-June 2012
4 releases	Gas appliance safety during floods
4 releases	Gas appliance safety and carbon monoxide awareness
1 media interview	Majority of gas line hits could be prevented. The Gas Safety Manager provided comment and context to gas line hit issues.

SAFETY MANAGER'S DISCUSSION

We continue with technical guidance as well as physical and risk assessments within the gas industry, with a focus on providing support to those areas undergoing technological change. The ongoing shift towards higher efficiency gas appliances provides challenges to the suppliers and contractors as they endeavor to install, commission, and maintain these generally more sophisticated appliances.

A recent, significant development was the agreement to have gasfitting designated as a "Red Seal" standalone trade. This development comes after many years of discussions between the Provinces and various stakeholder groups. The recognition of gasfitting as a trade separate from traditional piping trades qualifications (Plumbing, Steamfitting, etc.) will allow a more focused approach to training, and provide the consistency of qualifications currently enjoyed by other Red Seal trades. As the process evolves, the program to institute a Field Service Representative (FSR) for gasfitting will be developed jointly between the BCSA and stakeholders to provide a level of oversight appropriate to the trade in "Red Seal" form.

Information sharing and exchange with other regulators within Canada continues, along with our contributions to various national technical committees and subcommittees. Work continues on the initiative to produce the first joint Canadian/American gas code bearing both CSA and ANSI titles. This is proceeding as the proposed CSA/ANSI 2015 B149.6 Code for Biogas Generation and Utilization. This project is a result of strong American interest in our present CSA B.149.6 Digester Gas code, which is being used as a "best practices" document by many designers and regulators in the United States. The expansion of the agricultural and municipal waste diversion sectors is requiring regulators to expand and modify code requirements to manage the associated risks.

The use of compressed natural gas for vehicle fuel, and its storage as a liquid (LNG) continues to evolve, and is producing encouraging results for equipment suppliers and vehicle operators. We are close to the completion of the first, permanent LNG vehicle refueling station (located in the Fraser Valley); the development of permanent refueling infrastructure is key to increasing the availability and viability of LNG as a motor fuel. Recent interest expressed by BC Ferries in utilizing LNG in their fleet is providing additional opportunities for infrastructure development.

Biogas production and utilization for power generation and vehicle fuel continues to strengthen. As the technology develops, there will be increased demand for these types of systems as intelligent, environmentally prudent methods for control of gases produced from landfills, wastewater treatment plants, and the like.

Eric Skehor
Gas Safety Manager

Understanding Elevating Devices Safety Risks

In the Elevating Devices (ED) Safety Program at BC Safety Authority, we are responsible for overseeing the safety of elevators, escalators, moving walkways, dumbwaiters, lifts and construction hoists in accordance with the *Safety Standards Act* and the *Elevating Devices Safety Regulation*.

INCIDENTS

The following summarizes incidents reported to BC Safety Authority involving regulated elevating devices.

FIGURE 27:
ED Incident Reports 2008-2012

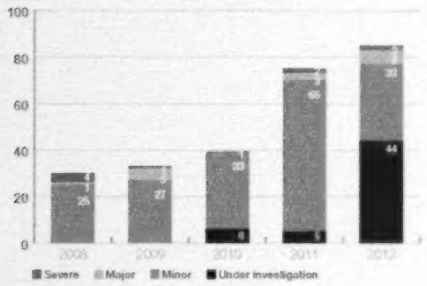


TABLE 27: ED Severe and Major Incidents in 2012

RATING	QTY.	DESCRIPTION
Severe	1	Unintended elevator door closure
	1	Fall in elevator shaft after elevator door forced open
Major	4	Slip/trip/fall on an escalator or elevator
	2	Footwear caught between escalator's skirt and step

There were no significant changes to the number and type of incidents reported to BC Safety Authority in 2012 as compared to previous years. BC Safety Authority has been working with operators to improve incident reporting frequency and the general increase is believed to be a result of those efforts. Of the 33 *MINOR* incidents, most were related to slips, trips and falls on escalators and elevators with seven incidents related to passengers getting footwear or clothing caught in escalators. A summary of incidents is included in Appendix A.

INJURIES

Injuries reported as a result of elevating device incidents in 2012 are summarized below.

FIGURE 28:
ED Injuries Reported 2008-2012

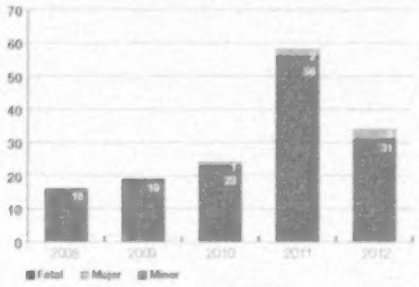


TABLE 28: Major Injuries Reported in 2012

RATING	QTY.	DESCRIPTION
Major	2	Fracture/multiple fractures
	1	Soft tissue injuries, sprains and strains

There were no significant changes to the number and type of injuries reported to BC Safety Authority in 2012 as compared to previous years. BC Safety Authority has been working with operators to improve incident reporting frequency and the general increase in minor injuries is believed to be a result of those efforts. Of the 31 *MINOR* injuries, most were lacerations, bruises or strains resulting from falls on escalators.

ASSESSMENTS OF REGULATED WORK

Elevating Devices Safety Officers assess new installations as well as operating devices as part of regular maintenance. Non-compliances are recorded when the physical assessment of work determines that it does not conform to the applicable regulation.

FIGURE 29: ED Installation Permits

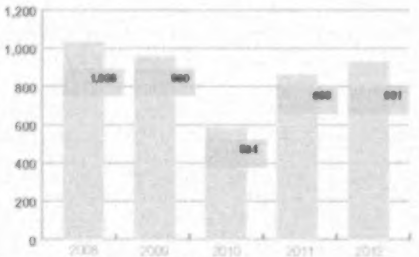


FIGURE 30: ED Operating Permits

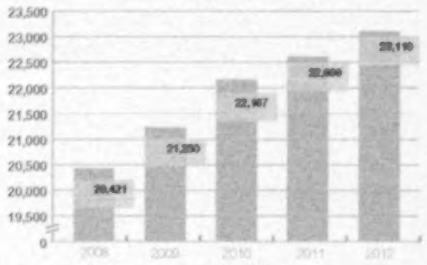


FIGURE 31: ED Physical Assessments

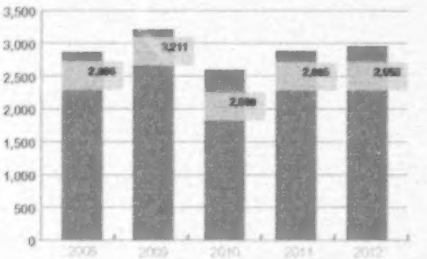
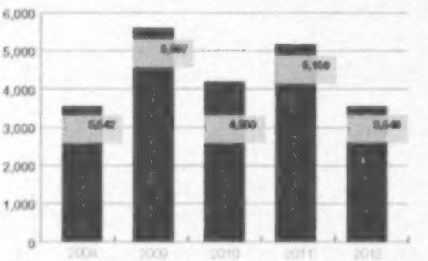


FIGURE 32: ED Non-Compliances Identified



Assessment of operating or in-service units was the continued focus of Safety Officers. More than 40% of all physical inspections performed were on existing elevators, and focused on the high risk occupancy buildings such as hospitals and shopping malls. In conjunction with assessing in-service units, we also conducted contractor declaration audits. A Declaration contains the examination and testing requirements for critical safety devices. By completing and submitting a Declaration, contractors are declaring the elevating device is safe to operate. From the assessment and auditing of operating units, we found that mandatory maintenance requirements as required by regulation were not consistently performed due to lack of awareness and understanding by owners, contractors and maintenance personnel.

Managing Elevating Devices Safety Risks

ENFORCEMENT

In 2012, one Compliance Order and two Monetary Penalties were issued; details of which are included in Appendices B1 and B2.

TABLE 29: ED Enforcement actions Taken in 2012

ACTION	CATEGORY	QTY. ISSUED
Compliance Order	Outstanding non-compliance(s)	1
Monetary Penalty	No permit	1
	Failure to take regulated safety precautions	1

LICENSING AND CERTIFICATION

BC Safety Authority requires that elevators are installed, operated and maintained by qualified and knowledgeable professionals. The following licences and certifications were issued to individuals that demonstrated the required capabilities to produce safe work with elevating devices.

TABLE 30: New ED Licences and Certificates of Qualification Issued in 2012

TYPE	DOCUMENT	QTY. ISSUED
Licence	Contractor Licence	25
Certificate of Qualification	Car Switch & Construction Elevator Operator	103
	Personnel Hoist & Construction Elevator Operator	41

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority issues Safety Orders, Directives and Information Bulletins to stop unsafe activity and provide clarification of regulatory requirements and interpretations. Additional details can be found in Appendix C or at www.safetyauthority.ca.

TABLE 31: ED Regulatory Instruments Issued in 2012

TYPE	DOC No.	TITLE/DESCRIPTION
Safety Order	SO-ED 2012-01	ThyssenKrupp Northern Elevator Sheave Brake (Sheave Jammer) Maintenance
Directive	D-L4 110803 5 Revision 2	Major and Minor Alterations
Recommendation for Amendment	N/A	Adoption of the 2009 edition of CSA B355 code.
	N/A	Establishment of elevating device drive mechanic certification in BC.

MEDIA RELATIONS

In addition to a media release summarizing enforcement actions taken, the Elevating Devices Safety Manager also provided comment and context for a television news feature regarding a Safety Order affecting single bottom cylinder elevators. A listing of all media relations can be found in Appendix F.

STAKEHOLDER ENGAGEMENT

Intended users of elevating devices for people with disabilities were invited to give feedback on the CSA B355-09 Code. As a result of stakeholder feedback, the clause on restricted access to these devices was not included in the final Request for Amendment to adopt the code. Elevating devices stakeholders were also consulted on a 3% fee increase, as well as fee structure changes within this 3% increase. Stakeholder feedback was also gathered on BC Safety Authority's new IT system changes, including what would be needed in an online customer access portal, a new service for the elevating devices technology.

The Elevating Devices Technology Advisory Committee met three times in 2012, with two Working Groups dedicated to the following issues:

- Emergency operations (in progress): Components of the recommendations submitted in 2011 were addressed. This Working Group will continue to work on issues involving the upcoming new edition of the Building Code, and unresolved issues of whether elevator doors should remain open in building lobbies during emergencies.
- Private residences elevating devices (planned): A new Working Group will be formed to review incidents involving these unregulated devices, and how to improve the safety of these devices through possibly registering the manufacturers, installers, or installations. The recommendations of an earlier Working Group on this issue were to create an educational brochure, distributed through contractors and health organizations but committee members felt that this issue needed to be re-examined.

SAFETY MANAGER'S DISCUSSION

Ensuring duty holders, which include individual workers, contractors and owners/property managers, take responsibility for technical safety is a fundamental building block in the safety system. Implementing Elevator Mechanic Certification aligns with our strategic objective to hold individuals who perform regulated work responsible and to ensure they have adequate knowledge and skills. Implementation of our Elevator Mechanic Certification Program is scheduled for July 2013 and there will be a one year transition to allow for individuals to apply for grand parenting, challenge the exam and to enroll in the approved education programs. Even though we have engaged industry throughout the process, it will be a challenge for Industry to administer a new program and to ensure there are certified individuals to perform regulated work which must be aligned with their licence scope.

Auditing the performance of a contractor and providing the feedback for them to improve their processes and policies will affect a wider system change on all elevating devices they install, maintain and alter versus making the individual site we inspect safe. We will however continue to perform physical inspections but Contractor Audits will be a continued shift on how we provide oversight.

Educating Owners and Property Managers on their responsibility and on how they can better manage their contractors will also be a continued focus. The challenge will be to exchange real time information, such as incident reporting so all parties can take appropriate and timely action.

Janice Lee, P. Eng.
Elevating Devices Safety Manager

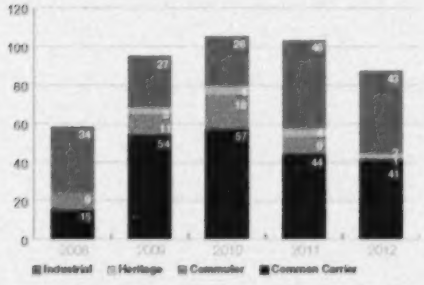
Understanding Railway Safety Risks

In the Railway Safety program at BC Safety Authority, we regulate railways that operate solely within British Columbia and have a Minister's Certificate issued by the BC Ministry of Transportation and Infrastructure. Provincial Railways are subject to the British Columbia *Railway Act*, *Railway Safety Act* and adopted Federal railway safety legislation. In the Railway Safety Program, we regulate five classes of railways: Common Carrier, Heritage, Commuter, Industrial and just recently added, Industrial Sidings and Spurs Railways.

ACCIDENTS AND INCIDENTS

Railways accidents and incidents are reported in accordance with adopted federal regulations. Figure 33 summarizes accidents and incidents reported to BC Safety Authority involving railway equipment. Typically, these accidents and incidents are low speed and low risk. Many of the accidents can be attributed to human error and violations to rules and procedures. The BCSA Railway Safety Program annually focuses its assessments and audits on employee training and the requirements for railway operators to perform proficiency testing of their railway employees.

FIGURE 33:
Railway Accident and Incidents 2008-2012



Note: Accidents and incidents occurring on railway property that were not related to railway operations are excluded.

Increased numbers of incidents in years 2010 and 2011 can be attributed to education and enforcement associated with reporting requirements. A reduction in the number of accidents and incidents in the year 2012, may be attributed to safety initiatives and railway performance but not enough data is available at this time do draw significant statistical conclusions. A summary of accidents and incidents is included in Appendix A.

INJURIES

Provincial railways are required to report injuries that are a result of railway operations to BC Safety Authority. This includes injuries to workers performing train operations or injuries to the public on railway property as a result of train operations.

FIGURE 34:
Railway Injuries Reported in 2012

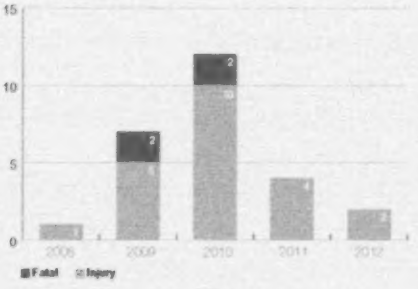


TABLE 32: Railway Injuries in 2012

RATING	QTY.	DESCRIPTION
Minor	2	Soft tissue injury, sprains or strains

ASSESSMENTS AND AUDITS OF REGULATED WORK

Railway Safety Officers assess and audit all operating railways as part of regular oversight. Assessments may result with non-compliances where the railway is found to not comply with the applicable Acts and Regulations. Railway operations are also audited against their Safety Management Systems, which are required for all railways, and the Railway Safety Program issues recommendations as a result of these audits.

FIGURE 35: Operating Railways 2008-2012

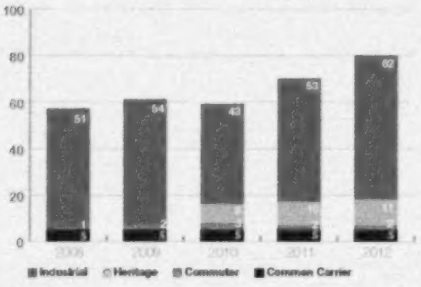


FIGURE 36: Assessments, Non-compliances, Recommendations

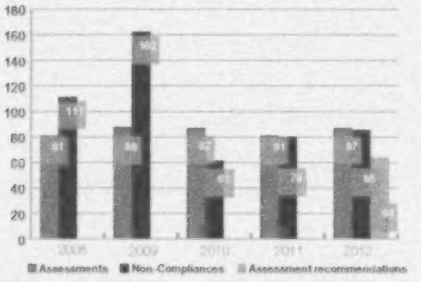
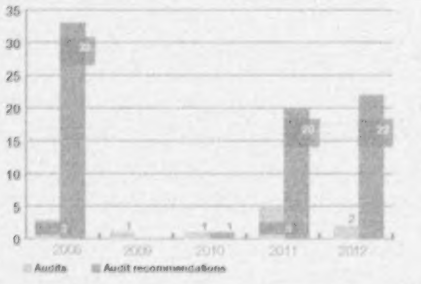


FIGURE 37: Audits and Recommendations



The Railway Safety Program performed 87 Assessments and two Audits in 2012. In the process they identified 85 non-compliances and made a total of 86 recommendations.

Managing Railway Safety Risks

STAKEHOLDER ENGAGEMENT AND TOWN HALL MEETINGS

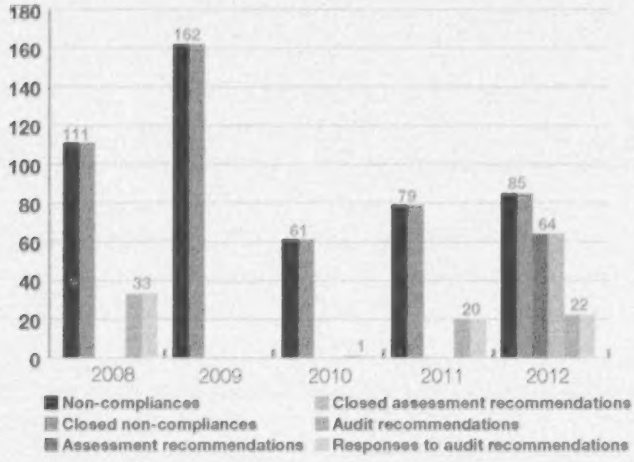
In Railway, Town Hall meetings were held with stakeholders in Prince George, Nelson and New Westminster to discuss industry issues, challenges and opportunities. This stakeholder engagement structure is used for railways in lieu of having a Technology Advisory Committee.

Clients were consulted on a risk-based fee structure for the Railway Safety Program from June to August 2012. The proposed fee structure would calculate a base fee for the inherent risk of their operations, and a variable fee based on the individual railway's performance in addressing these hazards. Since this new way of structuring fees would result in increases to some clients and decreases to others, clients had mixed responses to the proposed fee structure. Following consultation, the Railway Safety Program is confident that this fee structure is fair for industry, provides a platform for clients to control cost and makes the program cost recoverable. BC Safety Authority moved forward with the new fee structure effective January 1, 2013.

ENFORCEMENT

In the Railway Safety Program, enforcement is achieved through non-compliance and recommendation resolution. BC Safety Authority manages all non-compliances issued to closure, which is achieved when the recipient railway has submitted sufficient proof to BC Safety Authority to demonstrate resolution of the issue. Audit recommendations are required to be responded to as part of closing the audit from which the recommendation resulted.

FIGURE 38:
Railway Enforcement Actions Taken in 2012



REGULATORY AMENDMENTS

A recommendation for amendment was submitted to the Province on November 26, 2012 requesting amendments to clarify adopted federal legislative provisions and clarify roles and responsibilities for BC Safety Authority and the Ministry of Transportation and Infrastructure.

SAFETY MANAGER'S DISCUSSION

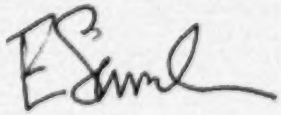
The Railway Safety Program will continue to focus its assessments and audits on high-risk activities occurring on provincial railways.

In 2012, there were a total of four critical-risk and 39 high-risk observations made by Railway Safety Officers as a result of their assessments and audits.

In regards to the four critical-risks, two provincial railways were required to immediately cease rail operations until employee training, qualifications and railway procedures under regulation were established to a satisfactory standard.

In regards to the 39 high-risks, the majority were associated with proficiency testing and accident reporting. The Railway Safety Program is of the opinion that provincial railways must comply with regulation to evaluate and provide supervision to employees in safety critical positions. It is fundamental to railway safety that all railway employees are trained and evaluated in the performance of their duties. Railway Safety Officers are working with each of these railways to establish programs to fulfill this requirement. Further, the failure to report accidents and incidents is unacceptable, as the safety system is reliant on understanding how and why accidents and incidents occur and what steps can be taken to prevent them in the future.

Finally, the Railway Safety Program will continue efforts to ensure all railways operating within the province are captured under BC Safety Authority's regulatory safety program. As the program moves into 2013 it will continue to identify new railway sidings and spurs and other operations that are operating outside the regulatory safety program.



Eric Samuelson
Railways Safety Manager

Understanding Passenger Ropeways Safety Risks

In the Passenger Ropeways Safety Program at BC Safety Authority, we are responsible for overseeing the safety of passenger ropeways throughout British Columbia in accordance with the *Safety Standards Act* and the *Elevating Devices Safety Regulation*. Passenger ropeways include tramways, gondolas, chairlifts, rope tows and passenger conveyors.

INCIDENTS

The following summarizes incidents reported to BC Safety Authority involving passenger ropeway (PR) equipment.

FIGURE 39:
PR Incident Reports 2008-2012

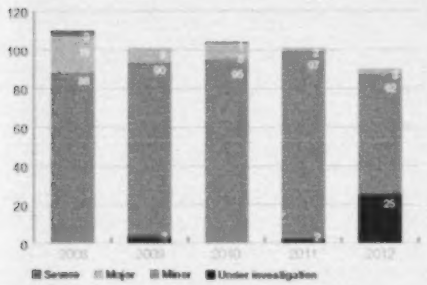


TABLE 33: Major Incidents Reported in 2012

RATING	QTY	DESCRIPTION
Major	1	Ropeway carrier slid on haul line
	1	Unintended contact with conveyor components
	1	Passenger fell from the ropeway carrier

There were no significant changes to number and type of passenger ropeway incidents reported in 2012. Most MINOR incidents resulted from falls from passenger carriers or slips when loading or unloading. Many *MINOR* incidents were also reported where equipment failures resulted with the activation of evacuation procedures. A summary of incidents is included in Appendix A.

INJURIES

Injuries reported as a result of passenger ropeway incidents in 2012 are summarized below.

FIGURE 40:
Injuries Reported 2008-2012

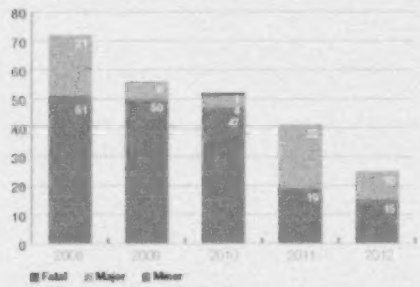


TABLE 34: Major Injuries Reported in 2012

RATING	QTY	DESCRIPTION
Major	10	Possible fractures/multiple fractures, dislocations, and concussions

The total number of injuries reported from incidents have steadily declined since 2008. MINOR injuries reported in 2012 were typically bruises, soft tissue damage or lacerations resulting from loading and unloading from passenger carriers.

ASSESSMENTS OF REGULATED WORK

Passenger Ropeway Safety Officers assess new installations as well as operating equipment as part of regular maintenance. Non-compliances are recorded when work does not conform to the applicable regulation.

FIGURE 41: PR Installation Permits

FIGURE 42: PR Operating Permits

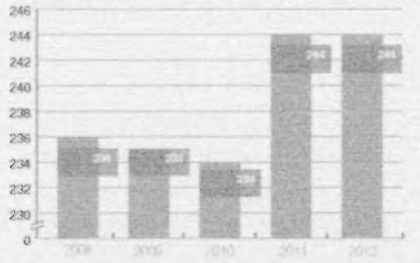


FIGURE 43: PR Physical Assessments

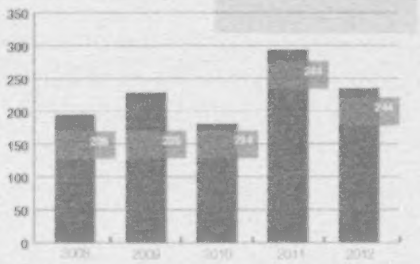
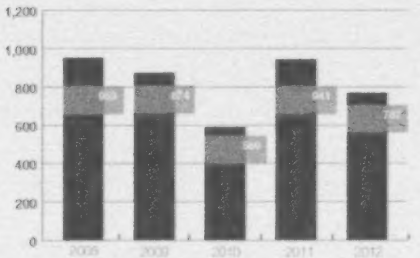


FIGURE 44: PR Non-Compliances Identified



A reduction in the number of identified non-compliances can be attributed to the reduction in physical passenger ropeway inspections for 2012. The number of installation permits issued for new and modified passenger ropeways was significantly less than the number issued for 2011, which is also a factor. Assessments related to incident investigations prompted the issuance of two Safety Orders to the passenger ropeway industry in 2012. An unsafe condition related to improper installation of carrier rope grips on fixed grip passenger ropeway installations caused two carriers to slide backwards on the haul rope. These incidents occurred at two different ski areas in the province and did not cause any injury to passengers. The second unsafe condition that prompted the issuance of a Safety Order was to passenger ropeway contractors not following a manufacturer's safety bulletin related to detachable rope grips. Further assessment determined that the lack of compliance with this bulletin affected installations throughout North America. The failure of a fixed jaw on a detachable rope grip alerted BC Safety Authority to this issue.

Managing Passenger Ropeways Safety Risks

LICENSING AND CERTIFICATION

BC Safety Authority requires that passenger ropeway equipment is installed, operated and maintained by qualified and knowledgeable professionals. In 2012, two licences were issued and two certificates of qualification were issued to individuals that demonstrated the minimum required capabilities to produce safe work.

TABLE 35: New Passenger Ropeways Licences and Certificates of Qualification Issued in 2012

TYPE	DOCUMENT	QTY. ISSUED
Licence	Contractor Licence	2
Certificate of Qualification	PRTC - Fixed Grip	1
	PRTD Surface RW	1

REGULATORY INSTRUMENTS AND AMENDMENTS

BC Safety Authority issues Safety Orders, Directives and Information Bulletins to stop unsafe activity and provide clarification of regulatory requirements and interpretations. Additional details can be found in Appendix C or at www.safetyauthority.ca.

TABLE 36: Passenger Ropeways Regulatory Instruments Issued in 2012

TYPE	DOC No.	TITLE/DESCRIPTION
Safety Order	SO-PR 2012-01	Above-surface Fixed Grip Passenger Ropeways – Rope Grip Installation and Resistance to Sliding
Safety Order	SO-PR 2012-02	Leitner Poma "X-Y" Sheave Assembly Axle Adjustment Bolts
Safety Order	SO-PR 2012-03	Doppelmayr DS Series Detachable Grip Fixed Jaw Failures
Bulletin	IB-PR 2012-01	Passenger Ropeway Work Carrier and Machine Guarding Safety – Procedure Review

There is no Safety Regulation in BC specific to Passenger Ropeways. Passenger Ropeways regulatory requirements are captured in the *Elevating Devices Safety Regulation*. In 2012, there were no amendments to the *Elevating Devices Safety Regulation* that affect passenger ropeways.

STAKEHOLDER ENGAGEMENT

Passenger ropeways stakeholders were interviewed regarding the impacts of BC Safety Authority's new IT system, including a customer access portal which can be used to apply for and view permits and access other BC Safety Authority services.

The Passenger Ropeways Technology Advisory Committee met once in 2012, and had one Working Group:

- Aging passenger ropeways: Further research will be conducted in 2013 to review data on the state of passenger ropeways that are beyond their design lifecycles. The Working Group will also recommend risk mitigation strategies if it is determined that the aging equipment poses risks.

SAFETY MANAGER'S DISCUSSION

Incident data gathered in 2012 reflects the downward trend in injuries as a result of passenger ropeway incidents since 2008. This is partially attributed to a change in incident reporting criteria from requiring a report for any injury requiring first aid on a passenger ropeway to reporting only those injuries where professional medical attention is required. As each passenger ropeway operating company adjusted their reporting practice to the new criteria, a reduction in reportable injuries would be the result.

Two high-risks related to failures of passenger ropeway equipment were identified on passenger ropeways in 2012. These risks were mitigated by implementing control plans that included two of the Safety Orders identified in the above table (SO-PR 2012-02 & SO-PR 2012-03). The actions required in the Safety Orders have resulted in the lower rating of these risks but monitoring will be required to ensure the implemented control plans continue to be effective.

A significant reduction in the number of installation permits for passenger ropeways was experienced this year compared with 2011. These low permit application numbers cannot be attributed to anything more than a reduction in market need. It is anticipated in 2013 that there will be an increase in new installations that include a new sightseeing gondola operation, a new six passenger detachable chairlift and one existing installation that will be relocated.

The passenger ropeway technology focused on developing a risk assessment tool to assess passenger ropeway operating permits and ensure that our actions are taken the highest risks are. This tool is in the pilot phase and data collected during onsite assessments in 2013 will be used to calibrate the tool to ensure its effectiveness. Today, risk is assessed by individual Safety Officers using an informal process that is effective but not well documented. Efforts to improve this risk assessment process through the use of this new tool will prepare us for possible future implementation in our new database software that goes live in 2013.

The development of a Passenger Ropeway Mechanics Certification Program will be explored in 2013. Certification is essential to ensure that duty holders possess the skill and ability required to safely maintain and operate passenger ropeways. This will support the owners of operating companies in their performance of first level inspections and allow BC Safety Authority to shift its activities to focus on the assessment of systems used by the duty holder to achieve safety outcomes.

Jason Gill
Amusement Devices and Passenger Ropeways Safety Manager

Understanding Amusement Devices Safety Risks

In the Amusement Devices (AD) Safety Program at BC Safety Authority, we are responsible for overseeing the safety of amusement ride installation and operation throughout British Columbia in accordance with the *Safety Standards Act* and the *Elevating Devices Safety Regulation*. The types of regulated amusement devices range from small waterslides and inflatable play equipment to larger rides such as roller coasters operating at the Pacific National Exhibition.

INCIDENTS

The following summarizes incidents reported to BC Safety Authority involving regulated amusement devices.

FIGURE 45:
AD Incident Reports 2008-2012

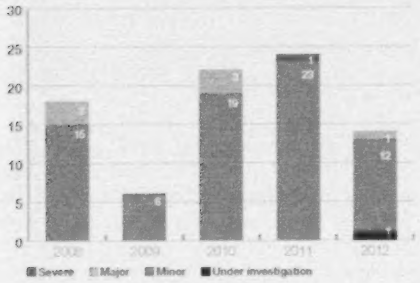


TABLE 37: AD Major Incident

RATING	QTY	DESCRIPTION
Major	1	Fall from zipline

There were no significant changes to the number and type of incidents reported to BC Safety Authority in 2012 as compared to previous years. Most *MINOR* incidents involved passengers riding waterslides or ziplines. A summary of incidents is included in Appendix A.

INJURIES

Injuries reported as a result of amusement device incidents are summarized below.

FIGURE 46:
Injuries Reported 2008-2012

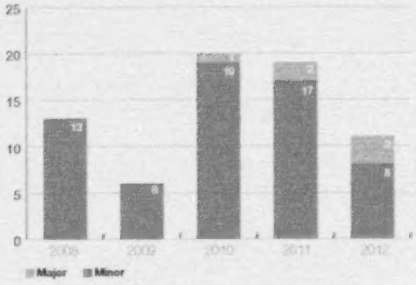


TABLE 38: Major Injury Reported in 2012

RATING	QTY	DESCRIPTION
Major	2	Possible fracture or concussion
	1	Soft tissue injury, sprain or strain

There were no significant changes to the number and type of injuries resulting from incidents in 2012. Minor injuries were typically bruises, lacerations and soft tissue damage resulting from waterslide incidents.

ASSESSMENTS OF REGULATED WORK

Amusement Devices Safety Officers assess new installations as well as operating equipment as part of regular maintenance. Non-compliances are recorded when work does not conform to the applicable regulation.

FIGURE 47: AD Installation Permits

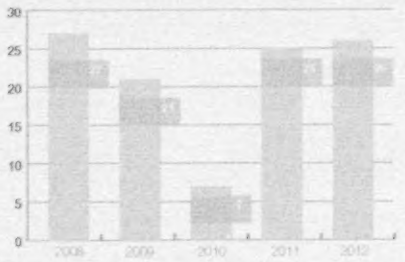


FIGURE 48: AD Operating Permits

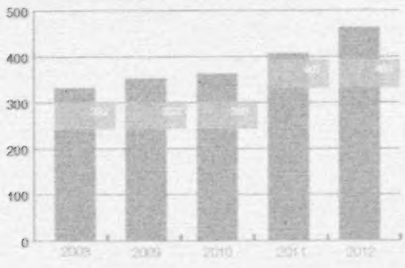


FIGURE 49: AD Physical Assessments

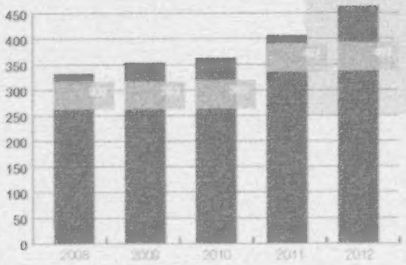
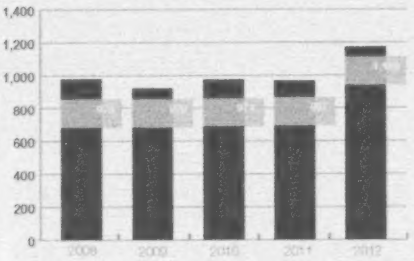


FIGURE 50: AD Non-Compliances Identified



The 2012 volume of physical assessments in the amusement devices program was similar to 2011. The highest volume of new installations was for zipline and inflatable type amusement devices. An incident investigation assessment on a zipline with a new braking system design resulted in it being shutdown due to a high number of incidents. It was determined modifications to the braking system were required prior to re-opening to the public. A procedural error was also discovered during the incident investigation where a rider stepped off of the launch platform but the trolley device was not mounted on the zipline track cable. This resulted in a five-foot fall and the rider received a compound leg fracture.

Managing Amusement Devices Safety Risks

ENFORCEMENT

In 2012, one Compliance Order was issued after an assessment determined that regulated work had been performed without the required licence or permit.

LICENSING AND CERTIFICATION

BC Safety Authority requires that amusement devices are installed, operated and maintained by qualified and knowledgeable professionals. In 2012, 18 Amusement Devices contractor licences were issued.

STAKEHOLDER ENGAGEMENT

One meeting was held with amusement devices stakeholders to determine the best course of action for sustaining an Amusement Devices Technology Advisory Committee, given the diversity of the sub-industries. For 2013, it is planned that the Amusement Devices Technology Advisory Committee will be structured to hold broad industry meetings to discuss common issues, and then separate into sub-industry meetings to discuss more specific issues. Stakeholders were also engaged in determining the impacts of BC Safety Authority's upcoming new IT system.

SAFETY MANAGER'S DISCUSSION

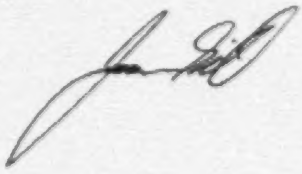
Incident data collected in 2012 shows a sharp decrease in injury as a result of amusement device incidents but this can be attributed to a lower number of incidents reported by the industry. There is no data point in the analysis that shows a clear picture of why reported incidents have declined but this may be partially due to a lack of reporting in this sector from duty holders who do not fully understand their responsibility to inform BCSA.

A significant increase in amusement device operating permits in 2012 is a result of a focused effort on continuing to bring inflatable amusement device operators into the safety system. A targeted communication to municipalities in British Columbia that informed business license and bylaw enforcement departments of the regulatory requirements for these amusement devices contributed to this increase. New zipline operations are also a factor in the number of new operating permits.

Many new contractors have been brought into the system that may not understand their obligations under the applicable legislation. Assessment and education of new and existing contractors continues to be a focus to mitigate risks in the amusement device technology. Enforcement action is taken when these interventions have failed. In the future, certification of amusement device duty holders to verify that responsible individuals are trained and competent will be explored.

In 2013 a new approach to the Amusement Device Technical Advisory Committee will be implemented to ensure that all sectors of this industry have an opportunity to contribute to the safety system. Amusement ride, waterslide, inflatable and zipline participants will each form a sub-committee to focus on safety issues unique to each of these sectors.

It is anticipated that the amusement device sector will see continued growth in 2013 and beyond. A significant increase in development is planned for British Columbia's largest amusement park over the next several years and we will continue to see new devices that will need to be assessed as to whether they meet the regulatory definitions for this technology.



Jason Gill
Amusement Devices and Passenger Ropeways Safety Manager

Appendix A: Incident Summaries

Incidents that are *UNDER INVESTIGATION* are excluded from these lists.

TABLE A-1: ELECTRICAL INCIDENTS

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Sicamous	Severe	3	Fatal (1 adult, 2 children)	Fatal	Mobile home destroyed	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, investigation identified improper splices involving aluminum conductors as a possible cause.
Enderby	Severe	1	Fatal (firefighter)	Fatal	Building and equipment destroyed	An explosion and fire occurred at an industrial premise. The heat caused an explosion of stored fluids and the resulting pressure blew the doors off the "C can", crushing a firefighter. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Burns Lake	Severe	22	2 Fatal, 20 Major	Fatal, Major	Saw mill structure destroyed	Explosions and fires occurred at at industrial saw mill.
Merritt	Severe	1	2nd and 3rd degree burns	Major	Electrical room damaged	The arc flash and fire occurred when an employee was removing branch wiring that supplied the time clock control for exterior signage in an energized load centre in the main electrical room.
Prince George	Severe	24	2 Fatal, 22 Major	Fatal, Major	Damage contained to saw mill structure	Explosion and fire occurred at an industrial saw mill.
Kelowna	Severe	1	Electrical shock	Fatal	#4 solid ground wire cut and/or removed	An individual contacted a high voltage power line on an access road.
Dawson Creek	Severe	0	N/A	N/A	Control cabinet damaged	When commissioning a heat trace controller, a fault occurred when a 20A breaker was turned on, causing an arc flash and smoke/fire damage.
Armstrong	Severe	0	N/A	N/A	Smoke, carpet damage	A fluorescent light tube failed and caused a fire at a multi-family residence.
Nanaimo	Severe	0	N/A	N/A	Fire damage	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Parksville	Major	0	N/A	N/A	Smoke, fire damage	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Nanaimo	Major	0	N/A	N/A	One switch destroyed, one switch damaged	A switchboard exploded when a millwright tried to start a 300hp compressor.
Port McNeil	Major	0	N/A	N/A	Upper level of 2 storey residence destroyed	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Lavington	Major	0	N/A	N/A	One half of the duplex destroyed	A fire occurred at an unoccupied multi-family residence. Although the cause of the multi fire was undetermined, electrical equipment was suspected to be involved.
Prince George	Major	0	N/A	N/A	Fire, smoke damage	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Prince George	Major	0	N/A	N/A	Damage confined to basement suite	A fire occurred at a multi-family residential premise. An extension cord used as a permanent outlet for a large appliance, and possibly other appliances, was a probable cause of the fire.
Abbotsford	Major	0	N/A	N/A	Fire, smoke damage	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Mission	Major	0	N/A	N/A	Fire damage	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Penticton	Major	1	Electrical shock, lost consciousness	Major	None	An employee received an electrical shock when climbing an aluminum ladder that had become energized.
Abbotsford	Major	0	N/A	N/A	Fire damage to structure	A fire occurred at a single-family residence. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Abbotsford	Major	0	N/A	N/A	Fire damage	A fire occurred at an industrial premise. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Langley	Major	0	N/A	N/A	Fire, smoke damage	A fire occurred at a residential workshop. Although the cause of the fire was undetermined, electrical equipment was suspected to be involved.
Mission	Major	0	N/A	N/A	Fire, smoke damage	A fire occurred at a single-family residence. It was likely that the fire started inside the electrical service meter base.
Westbank	Major	0	N/A	N/A	Distribution panels showed signs of stress; electrical service and subdistribution damaged	Lightning struck a secondary utility pole and caused smoke/fire damage to the residence's electrical system.
Kelowna	Minor	0	N/A	N/A	Fire, soot, smoke damage	A fire occurred at a single-family residence. An APC power bar melted and caught fire.

TABLE A-1: ELECTRICAL INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Dawson Creek	Minor	0	N/A	N/A	Attached garage and basement storage area damaged; extensive smoke damage	A fire occurred at a single-family residence.
Abbotsford	Minor	1	Electrical shock	Minor	None	An employee (carpenter) reported receiving an electric shock (minor voltage tingle) when using a saw.
Saanich	Minor	0	N/A	N/A	Fire damage	A fire occurred at a single-family residence.
Ft. St. John	Minor	0	N/A	N/A	Smoke damage	A fire occurred at a single-family residence.
Prince George	Minor	1	Smoke inhalation	Minor	Fire damage	A fire occurred at a single-family residence.
Nanaimo	Minor	0	N/A	N/A	Fire damage	A fire occurred at a single-family residence.
Kelowna	Minor	0	N/A	N/A	Fire damage localized to a work bench	A fire occurred at a single-family residence.
Dawson Creek	Minor	1	Burns	Minor	Fire damage	A fire occurred at a multi-family residence.
Sooke	Minor	0	N/A	N/A	Fire, smoke damage	A fire occurred at a single-family residence
Kelowna	Minor	1	Electrical shock	Minor	None	An employee received an electrical shock while performing a service upgrade at a single-family residence.
Kamloops	Minor	0	N/A	N/A	Electric hot water tank damaged; fire damage	A fire occurred at a single-family residence.
Nelson	Minor	0	N/A	N/A	Fire, heat, smoke damage	A fire occurred at a single-family residence.
Kelowna	Minor	3	Electrical shock	Minor	Damaged cabtire cable	Several recreational league hockey players complained of receiving electric shocks when sitting on the south bench and/or touching either gate through the metal boards to return to the ice.
Abbotsford	Minor	0	N/A	N/A	Cable damaged and requires repair	A consumer's service conductor was damaged at a multi-family residence.
Chilliwack	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a single-family residence.
Dawson Creek	Minor	1	Burns	Minor	Convection heater destroyed	A fire occurred at a single-family residence.
Winfield	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a single-family residence.
Kelowna	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a single-family residence.
Coquitlam	Minor	0	N/A	N/A	Fire, smoke damage; electrical cables burned	A fire occurred at a single-family residence.
Kelowna	Minor	0	N/A	N/A	6 breakers may require replacement; 225A panel damaged	Near-miss contact incident at an institutional premise. An employee bored holes through plywood and contacted the energized 225A load centre, causing six branch circuits to short.
Campbell River	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a commercial premise.
Burns Lake	Minor	0	N/A	N/A	Fire, water damage	A fire occurred at an industrial premise. During start-up of a daily shift in the planer building, a 15kW electric unit heater's blower motor failed to operate. Heat from the elements caused combustion of adjacent flammable materials.
Nanoose Bay	Minor	0	N/A	N/A	Meter base, utility service conductors and communication service damaged	Arc flash occurred when a technician was removing a hydro meter during a 'smart meter' exchange.
Campbell River	Minor	0	N/A	N/A	Fire damage	A fire occurred at a single-family residence.
Vancouver	Minor	1	Electrical shock	Minor	None	An employee received a minor shock while working on an energized motor control centre. The employee was troubleshooting an exhaust fan to a fume hood. The employee opened the hinged door to the 600V circuit breaker and put his multimeter clamp around one of the wires. When the employee activated the light on the multi-meter, his finger contacted the fuse holder on one phase, giving the worker a shock.

TABLE A-1: ELECTRICAL INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Langley	Minor	0	N/A	N/A	Fire, water damage to residence; meter base and cables damaged	A fire occurred at a single-family residence.
Campbell River	Minor	0	N/A	N/A	Power bar overheated and melted	The fire department reported the failure of a power bar caused a fire
Ft. St. John	Minor	0	N/A	N/A	Property damage	A fire occurred in a detached shop at a single-family residence. The fire department requested a Safety Officer's assistance to determine whether or not a previous installation was compliant.
Kelowna	Minor	0	N/A	N/A	Meter base damaged	A fire occurred at a road allowance near a vineyard. A lug in a 5-jaw meterbase failed causing a power outage at this station.
Kelowna	Minor	0	N/A	N/A	Equipment damaged	Contact incident; The boom of an excavator contacted the overhead span triplex. The tension caused the mast to bend.
Prince George	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a single-family residence.
Port Alberni	Minor	0	N/A	N/A	Electrical components destroyed; structural, smoke damage	A fire occurred at a single-family residence. The fire started during a 'smart meter' exchange.
Ft. St. James	Minor	0	N/A	N/A	Damaged electrical cables	A fire occurred at an industrial premise.
Saanich	Minor	0	N/A	N/A	Fire, smoke damage	A fire occurred at a commercial premise.
Isle Pierre	Minor	0	N/A	N/A	High voltage line damaged	Near-miss contact incident at an institutional premise. A load of logs accidentally hit the overhead neutral conductor on the pole line feeding the saw mill.
Langford	Minor	0	N/A	N/A	Equipment damaged, structural, smoke damage	A fire occurred at a commercial premise.
Fort Nelson	Minor	1	Electrical shock	Minor	None	An unqualified worker opened a lift station electrical control cabinet and was attempting to reset a pump override switch and received an electrical shock.
Chilliwack	Minor	0	N/A	N/A	Mobile home and contents destroyed	A fire occurred at a single-family residence.
Castlegar	Minor	1	Electrical shock	Minor	Flexible power cable damaged	An employee received an electrical shock when he made contact with a steel plate that was lowered onto a flexible power cable.
Chilliwack	Minor	0	N/A	N/A	Vinyl siding, strand board damaged, electric sign damaged	A fire occurred at a commercial premise.
Sooke	Minor	0	N/A	N/A	Electrical panel and wire damaged	An electrical short circuit on FPE combination panel branch circuit busbars caused an electrical fire in the service entrance of a single family residence.
Prince George	Minor	0	N/A	N/A	Damage contained to laundry area	A fire occurred at a single-family residence.
Mackenzie	Minor	0	N/A	N/A	Fuses blown	A power surge damaged a capacitor bank.
Abbotsford	Minor	0	N/A	N/A	Smoke damage	A fire occurred at a single-family residence.
Abbotsford	Minor	0	N/A	N/A	Roof of dairy barn damaged by fire	A fire occurred at a commercial premise.
Port Alberni	Minor	0	N/A	N/A	200A 120/208V 3-phase 7-jaw meter and conductors damaged	Electrical equipment and communication conductors became energized during a 'smart meter' exchange. Exchange was performed by the utility's contractor.
Kelowna	Minor	0	N/A	N/A	75' teck cable destroyed, smoke damage throughout electrical room	An electrical fire occurred at a commercial premise (within a pair of 250KCM teck cables after a capacitor upgrade).
Sparwood	Minor	0	N/A	N/A	Fire contained to meter base	A fire occurred in a meter base approximately 4 hours after the meter was changed to a 'smart meter' by the utility's contractor.

TABLE A-1: ELECTRICAL INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Coquitlam	Minor	0	N/A	N/A	Damaged meter base, meter and service conductors	A fire occurred in a meter base 2 weeks after existing meter was changed to a 'smart meter'.
Panorama Resort	Minor	0	N/A	N/A	Meter base damaged	During a 'smart meter' exchange, a utility contractor tugged at the meter when there was an electrical fault and ignited a fire.
Genelle	Minor	0	N/A	N/A	Smoke, fire, water damage	A fire occurred at single-family residence.
Kelowna	Minor	0	N/A	N/A	Gas-fired boiler destroyed, fire damaged mechanical room wall	A fire occurred at a commercial premise.
Kelowna	Minor	0	N/A	N/A	Exterior wall surface damaged	A fire occurred at a single-family residence.
Kelowna	Minor	0	N/A	N/A	Exterior damaged, cord end damaged	A fire occurred at an institutional premise.
Kelowna	Minor	0	N/A	N/A	Fire, water, smoke damage	A fire occurred at a single-family residence.
Kelowna	Minor	0	N/A	N/A	Wall receptacle and cord destroyed; area around box damaged by smoke, fire	A fire occurred at an institutional premise.
Campbell River	Minor	0	N/A	N/A	Smoke damage	An arc-flash occurred in a 100A disconnect switch in the electrical room of a multifamily residential residence resulting in a fire.
Saanich	Minor	0	N/A	N/A	Fire, smoke damage, appliances damaged	A fire occurred at an institutional premise.
Kamloops	Minor	0	N/A	N/A	Smoke, fire damage, equipment damaged	A fire occurred at a commercial premise.
Kelowna	Minor	1	Electric shock	Minor	None	An employee received a shock while working on an energized score-board sign.
Kelowna	Minor	0	N/A	N/A	Appliance, receptacle, blanket destroyed, smoke damage	A fire occurred at a multi-family residence.
Vancouver	Minor	0	N/A	N/A	Heating unit damaged	A fire occurred at an institutional premise.
Kelowna	Minor	0	N/A	N/A	Damaged meter and meter base	An arc flash occurred when a utility crew installed a meter onto a dual meter base.
Okanagan Centre	Minor	0	N/A	N/A	Charring inside wall cavity	A fire occurred at a single-family residence.
Richmond	Minor	1	Burns	Minor	Switch damaged	An employee experienced an arc flash while working in an energized dis-connect switch.
Vancouver	Minor	0	N/A	N/A	Circuit breaker and relays damaged	Failure of a 15kV circuit breaker and associated relays.

TABLE A-2: BOILERS, PRESSURE VESSELS AND REFRIGERATION INCIDENTS

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Prince George	Severe	0	N/A	N/A	Boiler damaged	Explosions in #1 recovery boiler lower furnace. "Salt cake" (sic) fell onto screen tubes, sheared off at least two tubes causing them to bend upwards. This caused water to spill onto the furnace floor, which resulted in the first explosion. A second explosion occurred approximately five minutes later. The second explosion was more violent that the first, and caused the economizer to blow off.
Prince George	Major	0	N/A	N/A	Damaged pressure piping	Failure of a 65# steam line occurred on an NPS 18 pipe section. Approximately 70% of the pipe circumference ruptured.
Vancouver	Major	0	N/A	N/A	Boiler damaged	The controls failed to shut down the fuel system during a low water condition and overheatting occurred.
Prince George	Minor	0	N/A	N/A	Leaking tube cut off at the steam and mud drums and plugged	Tube leak. Cracking at the mud drum tube on the boiler.
Crofton	Minor	0	N/A	N/A	Isolated equipment damage to 3 lower waterwall tubes	Tube leak external to the boiler. Inspection by contractor noted that a waterwall tube was leaking at a crack above the seal weld.
Prince George	Minor	0	N/A	N/A	Cracked weld	Leak in super-heater platten tubes and roof tubes.
Chetwynd	Minor	0	N/A	N/A	Cracking in nozzle welds	A stage-1 discharge bottle and a stage-two discharge bottles were found to have cracked at the Cat D weld joint in nozzles.
Victoria	Minor	0	N/A	N/A	Boiler shell damaged	Leak - crack in the feedwater inlet nozzle weld
Ft. St. John	Minor	0	N/A	N/A	Temperature control wires burned; flame impinged on front of boiler; gauges and valves damaged	A boiler experienced flame rollout to the point that flames had engulfed the entire front of the boiler.
Victoria	Minor	0	N/A	N/A	Damage to boiler tube	Water leak - tube plugged with scale failed.
Prince George	Minor	0	N/A	N/A	Cracked tube	A leak occurred in the generator bank tube at the mud drum level (front side).
Nanaimo	Minor	0	N/A	N/A	Economizer header handhole leak weld repair	An external leak on the boiler's upper rear economizer, left header, right hand hole cap occurred.
Prince George	Minor	0	N/A	N/A	Tube damaged	A tube leak occurred.
Prince George	Minor	0	N/A	N/A	Tube damaged	A tube leak occurred on a floor tube of the #2 power boiler.
Mackenzie	Minor	0	N/A	N/A	Pinhole in tube	A tube failed in the right wall of the power boiler
Fernie	Minor	0	N/A	N/A	Leak; ignition module melted	A low pressure steam boiler developed a leak and the controls failed to shut off the burner.
Port Coquitlam	Minor	0	N/A	N/A	None	A refrigerant leak occurred at an industrial premise.
Castlegar	Minor	0	N/A	N/A	None	General supervision status plant operator found safety valve blowing; control failed to operate as intended.
Qualicum Beach	Minor	0	N/A	N/A	Tube damaged	Operating engineer noted a pool over water forming on the concrete pad. The boiler was operating as lead boiler.
Golden	Minor	0	N/A	N/A	Tube damaged	A leak occurred during the course of normal operation.
Ft. St. John	Minor	0	N/A	N/A	Damaged tube	Tube failure on hot water watertube boiler. Overheating of the metal caused damage to the tube.
Crofton	Minor	0	N/A	N/A	Tube damaged	Leak in economizer tube.
Trail	Minor	0	N/A	N/A	Cracked weld	Slag fuming furnace #3 developed an external tube leak.
Vancouver	Minor	0	N/A	N/A	Pipe fractured, refrigerant lost	A leak at the C-1 heat pump caused the loss of 3000 lbs of refrigerant.
Trail	Minor	0	N/A	N/A	Cracked weld	Tube leak in the #3 slag boiler
Trail	Minor	0	N/A	N/A	Tube leak	External tube leak.

TABLE A-2: BOILERS, PRESSURE VESSELS AND REFRIGERATION INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Prince George	Minor	0	N/A	N/A	Damage to boiler	Compromised wall-to-floor seal resulted in smelt loss from lower vestibule. Operating area evacuated due to emergency shut down procedure of the Prince George recovery boiler.
Vancouver	Minor	0	N/A	N/A	None	Steam leak at the feedwater nozzle of a high pressure boiler steam drum. During the annual inspection of the HP boiler steam drum, the BSO observed steam leaking from a crack in a fillet weld on the feedwater line at the steam drum.
Skookumchuck	Minor	0	N/A	N/A	Cracked tube	A tube leak occurred in a recovery boiler.
Vancouver	Minor	0	N/A	N/A	Degraded casing refractory	Furnace refractory spalled and allowed flue gases (carbon monoxide) and emissions to enter the boiler room of a multi-family residential premise.
Vancouver	Minor	0	N/A	N/A	None	A high pressure steam boiler was placed into service without having the code-required installation and commissioning completed.
Golden	Minor	0	N/A	N/A	Steam turbine destroyed, piping damaged	A steam turbine (which operates a boiler feedwater pump) exploded.
Kelowna	Minor	0	N/A	N/A	None	An ammonia leak occurred at a commercial premise.

TABLE A-3: GAS INCIDENTS

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Osoyoos	Severe	1	Carbon monoxide (CO) exposure	Major	None	A homeowner was sent to hospital for exposure to combustion products.
Summerland	Severe	1	Burns	Minor	3 RVs destroyed	A fire occurred at a recreational premise (RV/campground). Although the cause of the fire could not be determined, gas equipment was suspected to be involved.
Salmo	Severe	3	CO exposure	Major	Furnace heat exchanger corroded	Elevated carbon monoxide (148 ppm in basement) at a single-family residence. A family received treatment at hospital for carbon monoxide poisoning.
Kelowna	Severe	0	N/A	N/A	Appliance (oven) destroyed	A bakery oven exploded. The oven's combustion chamber collapsed which restricted the flue gas to exit through the appliance and caused the appliance to overheat and explode.
Vancouver	Severe	1	Burns	Minor	Equipment damaged	An employee was injured when handling a propane tank.
Wynndel	Severe	0	N/A	N/A	Damage restricted to wall area surrounding the burners	The kiln's insulation smoldered, burned within the wall at the burner locations.
Nelson	Severe	0	N/A	N/A	None	A utility technician responded to a carbon monoxide call and found elevated carbon monoxide in the single-family residence.
Whistler	Major	0	N/A	N/A	Structure, furnishings damaged	A fire occurred at a single-family residence. Although the cause of the fire could not be determined, gas equipment was suspected to be involved.
Vancouver	Major	0	N/A	N/A	16" steel gas main damaged	A 16" steel gas main was struck by a horizontal drilling rig.
Abbotsford	Major	5	CO exposure	Major	Vent liner damaged	Combustion products from the appliance vented into residence, exposing occupants to carbon monoxide.
Langley	Minor	0	N/A	N/A	None	A utility responded to a gas odour call. A technician found high levels of carbon monoxide in the single-family residence.
Abbotsford	Minor	0	N/A	N/A	Damaged burner compartment and controls on e boiler	A fire occurred at a multi-family residential premise; black smoke had been seen coming out from under the boiler room door. Although the cause of the fire could not be determined, gas equipment was suspected to be involved.
Langley	Minor	0	N/A	N/A	None	Employees reported a gas odour; commercial/retail premise was evacuated.
Langley	Minor	0	N/A	N/A	Cracked heat exchanger	Routine maintenance detected cracked heat exchanger that had caused combustion products to enter occupied space.
Langley	Minor	1	CO exposure	Major	Termination cap corroded	Occupants felt ill and suspected problem with boiler. Utility technician responded and measured elevated carbon monoxide in the residence (433ppm in boiler room, 35ppm throughout house).

TABLE A-3: GAS INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Langley	Minor	0	N/A	N/A	None	A school was evacuated when a gas odour was detected.
Kelowna	Minor	0	N/A	N/A	None	A utility responded to carbon monoxide alarm and detected high levels of carbon monoxide (100ppm in the house, 1500ppm where the water heater was located)
Castlegar	Minor	0	N/A	N/A	Gas line damaged	An underground gas line was damaged.
Langley	Minor	0	N/A	N/A	None	A utility crew went to a site to disconnect gas service and found that the demolition was completed but the gas service was still live.
Mission	Minor	0	N/A	N/A	None	Occupants noticed an odd odour and contacted the utility. The utility crew reported 205ppm carbon monoxide spilling from furnace draft hood.
Coquitlam	Minor	0	N/A	N/A	Fire, smoke, water damage	A fire occurred at a commercial premise.
Nelson	Minor	0	N/A	N/A	Melted plastic objects	A "furnace ran wild and would not shut off" (sic). The millivolt gas valve would not shut off and ran constantly.
Langley	Minor	0	N/A	N/A	1/2" gas service damaged	A homeowner damaged underground gas line while doing yard work.
Kamloops	Minor	0	N/A	N/A	None	Fire department reported a gas odour at a commercial premise.
Langford	Minor	0	N/A	N/A	Potential damage to gas appliances	A utility technician reported that the residence's gas system 2 psi at the meter but the residence was designed as low pressure.
Burnaby	Minor	0	N/A	N/A	26mm steel gas line damaged	A contractor damaged a 26mm gas line hit while directional digging for a new water main installation.
Langley	Minor	0	N/A	N/A	1/2" gas service line damaged	A homeowner damaged an underground gas line while digging a trench.
Maple Ridge	Minor	0	N/A	N/A	Gas line damaged	While working on a neighbouring site, the excavation contractor noticed a gas smell.
Langley	Minor	0	N/A	N/A	Fire, smoke damage	A fire occurred at a commercial premise.
Richmond	Minor	0	N/A	N/A	None	A utility reported a gas leak at a commercial premise.
Maple Ridge	Minor	0	N/A	N/A	Gas line damaged	A dog damaged an underground gas line.
Abbotsford	Minor	0	N/A	N/A	Line damaged	A homeowner removed the gas meter and relocated the underground gas line without contacting the utility and without disconnecting the gas supply.
Surrey	Minor	1	Freezer burn	Minor	None	A release of liquid propane occurred at a commercial premise.
Tsawassen	Minor	0	N/A	N/A	TBD	An explosion and fire occurred at a single-family residence.
Kaleden	Minor	0	N/A	N/A	Fill nozzle damaged	Uncontrolled release of liquid propane. While filling a 20lb propane cylinder, the fill nozzle disconnected from the cylinder, causing the release of propane.
Surrey	Minor	0	N/A	N/A	Vandalism	A utility responded to an odour call and discovered a vacant house that had the existing piping removed and the house was filling with gas.
Surrey	Minor	0	N/A	N/A	Vandalism	A utility responded to an odour call and discovered a vacant house that had the existing piping removed.
Richmond	Minor	0	N/A	N/A	Vehicle destroyed	Soon after an employee connected the nozzle to refuel a propane van (recreational vehicle), a fire started under the van.
Vancouver	Minor	0	N/A	N/A	Exhaust fan belt damaged	Utility responded to a carbon monoxide call; technician observed 500ppm carbon monoxide at the gas-fired stock pot.
Penticton	Minor	0	N/A	N/A	None	Two businesses were evacuated due to a reported propane leak.
Colwood	Minor	0	N/A	N/A	None	Uncontrolled release of liquid propane.
West Vancouver	Minor	0	N/A	N/A	None	The exhaust vent dislodged from an elbow connection, allowing combustion products to vent into a single-family residence.

TABLE A-4: ELEVATING DEVICES INCIDENTS

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Richmond	Severe	0	Canine fatality, no human injuries	N/A	None	A passenger boarded the elevator car, one of two dogs remained in the lobby. When the eleventh floor button was pushed, the door closed and the dog's leash was caught in the door. When the elevator went up, the dog was dragged to the top of the door.
Kamloops	Severe	1	Lacerations, bruising	Minor	Roof of elevator car damaged	An employee used an emergency device to open the second floor elevator shaft door. The employee fell down the shaft onto the top of the elevator car and through the panel tile roof of the elevator.
Kamloops	Major	1	Laceration	Minor	None	A passenger (3 years old) lost her balance near the bottom of the escalator, put her hand behind her and caught it in the escalator, causing a laceration.
West Vancouver	Major	1	Broken toe, bruised swollen foot	Major	None	A passenger's rubber boot was caught in escalator (between step and skirt).
Surrey	Major	1	Bruises, lacerations, pain	Minor	Dragging along left side of skirting	A passenger's shoe was caught between escalator's skirt and step.
Kelowna	Major	1	Multiple fractures in knee	Major	None	A passenger tripped and fell while entering the elevator.
Burnaby	Major	1	Not specified	Major	None	A passenger took his scooter down the escalator, passenger and scooter rolled sideways down the escalator.
West Vancouver	Major	1	Lacerations, may require stitches	Minor	None	A passenger (young child) fell on an escalator.
North Vancouver	Minor	0	N/A	N/A	None	A passenger's shoelace caught while riding the down escalator.
Victoria	Minor	1	Laceration on face	Minor	None	A passenger was hit by the elevator doors while loading and unloading equipment from the unit.
Richmond	Minor	1	Passenger hit head on bottom of escalator	Minor	None	A passenger fainted on the escalator.
Vancouver	Minor	1	Pinched/ swollen fingers	Minor	None	A passenger's fingers were caught between the doors as she was closing them.
Richmond	Minor	1	Lacerations, pain/soreness	Minor	None	A passenger fell sideways on escalator.
Surrey	Minor	0	N/A	N/A	None	A passenger fell at the top landing.
Victoria	Minor	0	N/A	N/A	None	A passenger was trapped inside an elevator during extreme winds.
Vancouver	Major	1	Slip/fall	Minor	None	A passenger slipped and fell down the escalator.
Vancouver	Minor	2	Lacerations, pain	Minor	None	A passenger boarded the escalator with luggage, lost her balance and fell. The passenger caused another passenger to fall.
Vancouver	Minor	0	N/A	N/A	None	A passenger fell on low point of escalator.
North Vancouver	Minor	0	N/A	N/A	None	A passenger's boot was caught between the escalator's skirt and step.
Richmond	Minor	1	Lacerations, taken to hospital	Minor	None	A passenger collapsed on escalator; passenger was suspected to be intoxicated.
Vancouver	Minor	1	Lacerations	Minor	None	A passenger stumbled, fell down the escalator.
Vancouver	Minor	0	N/A	N/A	None	A passenger's clothing was caught in escalator.
Vancouver	Minor	0	N/A	N/A	None	A passenger fell on escalator.
Vancouver	Minor	1	Not indicated	Minor	None	A passenger fell at the top of the escalator.
Vancouver	Minor	1	Laceration	Minor	None	A passenger cut foot on unit.
Vancouver	Minor	1	Not indicated	Minor	None	A passenger's shoelace was caught in comb plate.
Kelowna	Minor	1	Lower back pain	Minor	None	An elevator came to abrupt stop after falling two floors.
Vancouver	Minor	1	Not indicated	Minor	None	A passenger fell.
Surrey	Minor	1	Pain	Minor	None	A passenger's boot was caught between escalator's skirt and step.
Vancouver	Minor	1	Not specified	Minor	Comb plate damaged	A passenger's clothing became stuck in escalator comb plate.

TABLE A-4: ELEVATING DEVICES INCIDENTS (CONTINUED)

CITY	INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Richmond	Minor	1	Unknown - did not seek medical attention	Minor	None	A passenger tripped.
Vancouver	Minor	1	Lacerations, pain in neck, chest, abdomen, head	Minor	None	The passenger missed a step on the escalator and fell.
West Vancouver	Minor	1	Pain/stress on right hand	Minor	None	After a passenger entered the elevator, the unit accelerated downwards and stopped suddenly (approximately 4.5' below the 4th floor).
New Westminster	Minor	0	N/A	N/A	None	STA (sic) observed that the escalator had stopped with 6 people on it. The escalator was also observed rolling backwards.
Vancouver	Minor	1	Lacerations, pain	Minor	None	A passenger slipped and fell on an escalator.
Burnaby	Minor	0	N/A	N/A	None	A passenger's shoelaces became caught in the escalator. The passenger lost balance but was caught by the following passenger.
Vancouver	Minor	1	Pain	Minor	None	A passenger fell up the escalator.
Vancouver	Minor	1	Laceration	Minor	None	A passenger tripped as she was walking up the escalator.
Vancouver	Minor	2	Pain	Minor	None	A male passenger fell backwards down the escalator, and knocked down a female passenger.
Victoria	Minor	2	Pain	Minor	None	Two passengers tripped as they exited the elevator.
Victoria	Minor	1	Lacerations	Minor	None	A passenger wearing flip-flops cut her toe on an escalator.

TABLE A-5: RAILWAY ACCIDENTS AND INCIDENTS

RAILWAY CLASS	DATE	ACCIDENT OR INCIDENT	INJURY	STATUS	DESCRIPTION	RISK ASSESSMENT
Common Carrier	18-Jan-12	Incident	Minor Injury	Closed	Employee rolled his ankle when he slipped on rung of ladder.	Low
Common Carrier	27-Jan-12	Accident	No	Closed	Derailed set of light engines over switch. Front truck leading set of wheels derailed.	Low
Common Carrier	6-Feb-12	Accident	No	Closed	1 engine and 4 cars derailed over crossoverswitch.	Med
Common Carrier	13-Feb-12	Accident	No	Closed	Rail rolled and 4 cars derailed. No damage or leakage involved on the dangerous goods cars.	Med
Common Carrier	23-Feb-12	Accident	No	Closed	Pushed one car over end of track, derailing one set of trucks.	Low
Common Carrier	23-Feb-12	Incident	No	Closed	A run-through switch occurred after a new employee (7 months) lined the wrong switch and instructing the movement to proceed. There was no derailment as a result of the run-through switch.	Low
Common Carrier	5-Apr-12	Accident	No	Closed	When pushing cars, pushed cars into stop block and rails spread.	Low
Common Carrier	13-Apr-12	Accident	No	Closed	Locomotive consist backed into shop doors.	High
Common Carrier	24-Apr-12	Accident	No	Closed	Derailed one autorack.	Low
Common Carrier	25-Apr-12	Accident	No	Closed	Derailed one set of trucks on car when pushing 7 cars over scale.	Low
Common Carrier	30-Apr-12	Accident	No	Closed	When pushing 25 cars, 4 empty cars derailed.	Med
Common Carrier	1-May-12	Accident	No	Closed	When pushing onto scale track 1, car derailed on one set of trucks.	Low
Common Carrier	1-May-12	Incident	No	Closed	RTC did not issue GBO advising new time table in effect.	Low
Common Carrier	4-May-12	Accident	No	Closed	Derailed one set of trucks while pushing cars.	Low
Common Carrier	9-May-12	Accident	No	Closed	Run-through switch with 2 engines and 1 loaded auto rack and derailed one engine.	Low
Common Carrier	21-May-12	Accident	No	Closed	Derailed engine 384 when sharp flange split switch on track 12 in Trapp yard.	Low
Common Carrier	1-Jun-12	Accident	No	Closed	When pushing 3 cars onto scale track in Trapp yard one empty car derailed leading wheel.	Low
Common Carrier	6-Jun-12	Accident	No	Closed	When pushing 9 auto racks a second auto rack derailed leading truck at the 3-4 switch.	Low

TABLE A-5: RAILWAY ACCIDENTS AND INCIDENTS (CONTINUED)

RAILWAY CLASS	DATE	ACCIDENT OR INCIDENT	INJURY	STATUS	DESCRIPTION	RISK ASSESSMENT
Common Carrier	14-Jun-12	Accident	No	Closed	When spotting cars for a client, one load derailed because the length of the car was too long for the curve.	Low
Common Carrier	25-Jun-12	Accident	No	Closed	When pulling 2 loads and 8 empties, 1 load and 1 empty derailed.	Low
Common Carrier	25-Jun-12	Accident	No	Closed	When pushing autoracks to a spur, one wheel derailed on engine due to track conditions.	Low
Common Carrier	28-Jun-12	Accident	No	Closed	Pushing 31 loads and 14 empties the rail rolled, derailing one wheel on engine.	Low
Common Carrier	31-Jul-12	Accident	No	Closed	Tail end of car pushed into gravel pile, derailing car.	Low
Common Carrier	1-Aug-12	Accident	No	Closed	Rail rolled when pushing 5 loads, derailing 2 cars.	Low
Common Carrier	3-Aug-12	Accident	No	Closed	2 cars derailed caused by bypassed knuckles.	Low
Common Carrier	4-Sep-12	Accident	No	Closed	1 engine and 3 empty coal cars derailed.	Low
Common Carrier	7-Sep-12	Accident	No	Closed	When shoving cars from the east, crew pushed down the wrong track and struck stationary engine and cars. This resulted in derailing the empty articulated flat car which jack knifed and hit car on adjacent track.	High
Common Carrier	9-Sep-12	Incident	No	Closed	Bypass knuckle caused damage to brake pipe.	Low
Common Carrier	20-Sep-12	Accident	No	Closed	3 cars derailed while pushing the cars.	Med
Common Carrier	20-Sep-12	Accident	No	Closed	When pushing 28 cars the crew pushed trailing car off end of track.	Low
Common Carrier	2-Oct-12	Accident	No	Closed	When pulling cars, engine 906 derailed at Side #1 switch.	Low
Common Carrier	3-Oct-12	Incident	No	Closed	RTC instructed crew to enter track section with an occupancy.	High
Common Carrier	5-Oct-12	Accident	No	Closed	1 empty centre beam flat car derailed when pushing over switch.	Low
Common Carrier	6-Oct-12	Accident	No	Closed	When pulling off barge the last car derailed one axle.	Med
Common Carrier	9-Oct-12	Accident	No	Closed	Derailed one car, the car came off then rerailed on a switch.	Low
Common Carrier	15-Oct-12	Accident	No	Closed	Derailed one set of trucks on empty car when pushed off end of track.	Low
Common Carrier	18-Oct-12	Accident	No	Closed	Set of lite engines sideswiped container train, derailing 2 cars.	High
Common Carrier	25-Oct-12	Accident	No	Closed	Derailed one set of trucks on empty car when pushing over frog.	Low
Common Carrier	27-Oct-12	Accident	No	Closed	2 cars derailed when running around train.	Low
Common Carrier	27-Oct-12	Accident	No	Closed	When switching, the crew let car run free, when cars came together knuckles bypassed causing damage to cars.	Med
Common Carrier	22-Nov-12	Accident	No	Closed	Crew was pulling 4 loads and 5 empties when 1 set of trucks derailed over switch.	Low
Commuter	27-Aug-12	Accident	No	Closed	Derailed rail mover when travelling over switch 307 on frog guard.	Low
Heritage	4-May-12	Accident	No	Closed	Conductor knocked off handbrake on two car set, cars rolled away, went through shop doors, struck a car in shed and pushed car off the end of tracks.	Critical
Heritage	24-Jun-12	Accident	No	Closed	1 passenger coach derailed when conductor put train into emergency while travelling over switch.	High
Industrial	9-Jan-12	Accident	Minor Injury	Closed	When CP crew came in to pick up tank car the washdown hose was still attached to car. Trainman was signaled to pull the car with the hose still attached causing the hose to spring back and strike the trainman.	Med
Industrial	29-Jan-12	Accident	No	Closed	Derailed 1 load of lumber when pushing over switch.	Low
Industrial	6-Feb-12	Accident	No	Closed	1 car derailed due to ice buildup in crossing while CN was pulling.	Low
Industrial	9-Feb-12	Accident	No	Closed	Car pushed over derail, wheels derailed on one axle.	Med
Industrial	9-Feb-12	Accident	No	Closed	Derailed locomotive in loadout overload ramp due to buildup of ice and snow.	Low
Industrial	14-Feb-12	Accident	No	Closed	Pushed one car over closed derail due to crew error.	Med
Industrial	20-Feb-12	Accident	No	Closed	Derailed one set of wheels on engine due to ice and snow build up.	Low
Industrial	2-Mar-12	Accident	No	Closed	While pushing caustic soda car, rail broke and car derailed.	Med

TABLE A-5: RAILWAY ACCIDENTS AND INCIDENTS (CONTINUED)

RAILWAY CLASS	DATE	ACCIDENT OR INCIDENT	INJURY	STATUS	DESCRIPTION	RISK ASSESSMENT
Industrial	3-Mar-12	Accident	No	Closed	Ran through switch and derailed car.	Low
Industrial	8-Mar-12	Accident	No	Closed	1 loaded pulp car derailed due to broken rail.	Low
Industrial	20-Mar-12	Accident	No	Closed	2 loaded chip cars derailed when crew accidently split switch while pushing back.	Low
Industrial	30-Mar-12	Accident	No	Closed	2 cars derailed due to broken rail.	Low
Industrial	9-Apr-12	Accident	No	Closed	Pushed one car over locked derail, derailing 1 set of wheels.	Med
Industrial	10-Apr-12	Incident	No	Closed	When off loading barge, rail car door got caught on barge pipe and door was pulled off.	Med
Industrial	18-Apr-12	Accident	No	Closed	Car walked up on some spilled coal and derailed one set of trucks.	Low
Industrial	18-Apr-12	Accident	No	Closed	Derailed 2 loaded pulp boxes in lower yard through switch. The tie plates separated from the ties.	Low
Industrial	20-Apr-12	Accident	No	Closed	Derailed 3 loaded pulp cars in lower yard due to track defect.	Med
Industrial	25-Apr-12	Accident	No	Closed	Empty caustic car walked up on frog and derailed one set of wheels.	Med
Industrial	27-Apr-12	Accident	No	Closed	Empty caustic car walked up on switch frog and derailed one set of wheels.	Med
Industrial	6-May-12	Accident	No	Closed	Derailed one set of wheels on empty hydrochloric acid car when pushing over new track.	Med
Industrial	8-May-12	Accident	No	Closed	When pulling clay cars from clay track, rails spread, derailing 2 loads.	Low
Industrial	12-May-12	Incident	No	Closed	Pulled cars from warehouse with loading ramp connected to one car. Loading ramp struck warehouse door.	High
Industrial	20-May-12	Accident	No	Closed	1 car derailed when pushing cars over track 2 switch. Crew did not check switch points.	Low
Industrial	17-Jun-12	Incident	No	Closed	Ran through switch at south end of yard.	Low
Industrial	19-Jun-12	Accident	No	Closed	When pushing car north, truck derailed.	Low
Industrial	26-Jun-12	Incident	No	Closed	Scrap metal car rolled away and ran through switch.	High
Industrial	16-Jul-12	Accident	No	Closed	Pushed car over derail, derailing one set of wheels on flat car.	Med
Industrial	21-Jul-12	Accident	No	Closed	Derailed shuttle wagon on switch when pushing cars into warehouse.	Low
Industrial	22-Jul-12	Accident	No	Closed	Pushed chip cars through switch derailing 2 cars.	Low
Industrial	25-Jul-12	Incident	No	Closed	Loader came unattached from lumber cars and rolled freely until employees ran and applied handbrake.	High
Industrial	17-Sep-12	Accident	No	Closed	Derailed 3 cars in loadout when cars walked up on spilled coal.	Low
Industrial	19-Sep-12	Incident	No	Closed	Pad air valve was not closed on acid car when CP pulled car. A small amount of product discharged and spilled on conductors clothes.	High
Industrial	28-Oct-12	Accident	No	Closed	Pushed an empty chip car over derail, derailing one set of trucks.	Med
Industrial	7-Nov-12	Accident	No	Closed	Derailed one car over stop block on storage track.	Low
Industrial	16-Nov-12	Accident	No	Closed	Pushed loaded car over derail, derailing car.	Med
Industrial	21-Nov-12	Incident	No	Closed	Ran through switch when switching pulp boxes.	Low
Industrial	26-Nov-12	Accident	No	Closed	1 car rolling uncontrolled, hit derail and fell on it's side.	Critical
Industrial	29-Nov-12	Incident	No	Closed	Magnetic switch on indexer failed which resulted in damage to brake pipe on rail car.	Low
Industrial	11-Dec-12	Accident	No	Closed	Derailed 2 cars when they walked up on spilled coal.	Low
Industrial	19-Dec-12	Accident	No	Closed	Train was travelling out of the turnout when a Dangerous Goods car derailed at a yard switch (2 wheels on the ground).	Med
Industrial	22-Dec-12	Accident	No	Closed	Locomotive was driven over closed Derail, 4 wheels on the ground.	Med
Industrial	22-Dec-12	Accident	No	Closed	Empty chip car pushed over derail. Front set of wheels on the ground. Sufficient brakes were not applied, 3 cars had brakes on.	Med
Industrial	23-Dec-12	Accident	No	Closed	When pulling a string of 3 cars, the lead car walked up on ice and derailed.	Low

TABLE A-6: PASSENGER ROPEWAYS INCIDENTS

INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Major	0	N/A	N/A	None	Chair slipped on the haul rope into the chair behind it. Both chairs were unoccupied.
Major	1	Broken radius and ulna	Major	None	A lift mechanic caught his right arm in the 'pinch point' of the return station tail drum (roller) and the conveyor belting while the conveyor was operating.
Major	1	Possible neck, lower back and right hip injury	Major	None	A passenger unloaded late from carrier (approximately 3 metres past designated point), jumped from carrier and fell forward onto unload ramp, landing on her face/head/neck.
Minor	1	Sore knee	Minor	None	A passenger fell out of a carrier prior to the unload point.
Minor	1	Bruises	Minor	None	Gondola cabin was pushed back until guide peg came out of rail and cabin stopped moving.
Minor	1	Possible dislocated shoulder	Major	None	A passenger fell after skiing off end of the load ramp.
Minor	1	Lower back pain, no neurological deficit reported	Minor	None	A passenger fell out of a chair after loading.
Minor	0	N/A	N/A	None	A passenger attempted to load onto carrier with the seat flipped up. The passenger leaned forward and slid out of the chair and was hanging from the carrier for approximately 25 mins.
Minor	0	N/A	N/A	None	Partial rope derailment
Minor	0	N/A	N/A	None	A passenger fell while loading a chairlift and was struck by the carrier.
Minor	1	Fractured femur	Major	None	A passenger fell onto the unloading ramp, resulting in injury.
Minor	0	N/A	N/A	None	Haul rope deropement on a tower sheave assembly.
Minor	0	N/A	N/A	Carrier restraining bar damaged	The aluminum wand on the safety gate became entangled with the carrier, causing the carrier to swing back and become caught in the downhill sheave guide.
Minor	0	N/A	N/A	None	The chairlift's diesel engine and evacuation drive were inoperable, requiring passengers to be manually evacuated from the lift line.
Minor	1	Possible neck/back injury/STI	Major	None	A passenger fell backwards while unloading from carrier.
Minor	1	Sprained ankle, possible knee injury	Minor	None	A passenger was loaded onto carrier with seat flipped up. The operator immediately hit the stop button, and the carrier stopped between the station and tower #1. The passenger jumped from the carrier causing injury to left leg.
Minor	0	N/A	N/A	None	Deropement of tower 8 down-hill-side sheave assembly.
Minor	0	N/A	N/A	Broken drive shaft	The drive shaft failed on return station carrier conveyance system, one passenger was manually evacuated.
Minor	0	N/A	N/A	None	A passenger fell approximately 2.5m from a carrier approximately 6.5m before the unload point.
Minor	1	Fractured knee	Major	None	A passenger skied past "wait here" sign and was struck by carrier, resulting in a fractured knee.
Minor	0	N/A	N/A	Electrical damage to AC drive resistors	An electrical failure occurred on the AC drive; two passengers required evacuation.
Minor	0	N/A	N/A	Electrical wiring damaged	The lift stopped on a tower switch fault (derail); 19 passengers evacuated manually.
Minor	0	N/A	N/A	Drum hub damaged	The hub of the return tail drum on a conveyor cracked around the taper lock.
Minor	1	back injury; packaged on spine board as a precaution	Major	None	A passenger fell from carrier, approximately 3 to 4 metres off the end of a platform, resulting in injury.
Minor	0	N/A	N/A	None	Power failure, resulting in use of evacuation drive
Minor	0	N/A	N/A	None	A passenger (5 year old) fell approximately 10 metres from a detachable chair lift.
Minor	1	Swelling, tenderness	Minor	None	A lift operator was cleaning snow from the end of a passenger conveyor when she slipped and jammed her boot in the space between the head drum and machine frame. The safety plate device reacted immediately and shut down the conveyor.
Minor	0	N/A	N/A	None	A passenger fell from a detachable chairlift carrier.

TABLE A-6: PASSENGER ROPEWAYS INCIDENTS (CONTINUED)

INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Minor	0	N/A	N/A	None	The electric drive could not move ropeway, evacuation required (evacuation drive).
Minor	0	N/A	N/A	Scrapes along side of tower tube; tower ladder to be replaced	A snowcat that was grooming a ski run struck a ladder and scraped along the side of the tower tube.
Minor	1	Twisted knee	Minor	None	A passenger unloaded further down the unload ramp and fell from the carrier (approximately 8m to 10m).
Minor	1	Wrist swollen, tender	Minor	None	A passenger fell backward while attempting to load conveyor.
Minor	0	N/A	N/A	None	Deropement captured by rope catcher.
Minor	1	Pain, left clavicle	Minor	None	A passenger slipped of the carrier while loading a chairlift and fell on the loading ramp.
Minor	1	Knee sprain	Minor	None	A passenger fell while unloading.
Minor	0	N/A	N/A	None	The evacuation drive was used after a sensor was activated on the "gen set motor" (sic).
Minor	0	N/A	N/A	None	The evacuation drive was used to evacuate passengers after a power failure.
Minor	0	N/A	N/A	Haul rope damaged; damage was beyond the allowable CSA code limit	A haul rope on a chairlift failed and was damaged beyond allowable limits.
Minor	0	N/A	N/A	None	The main diesel drive stopped. The evacuation drive was engaged to off-load the passengers.
Minor	1	Twisted knee	Minor	None	A passenger jumped from the carrier and fell approximately one metre.
Minor	1	Possible concussion	Major	None	A passenger fell while unloading from ropeway and hit head on the ramp. The passenger was wearing a CADS leg suspension system and a strap was caught under the carrier's seat. (CADS: Constant-force articulated dynamic struts).
Minor	1	Sore ankle	Minor	None	A foot passenger riding a conveyor failed to properly unload. The passenger's foot was lodged in the safety relief plate opening.
Minor	0	N/A	N/A	Broken handle guide, damaged handle, broken wire	Deropement on the drive sheave.
Minor	0	N/A	N/A	Haul rope damaged	During a routine haul rope inspection, maintenance staff identified several broken wires in a haul rope.
Minor	0	N/A	N/A	None	A passenger slipped out of a carrier and fell approximately 1.5 metres.
Minor	1	Twisted knee	Minor	None	A passenger twisted his/her knee after loading onto a carrier.
Minor	0	N/A	N/A	None	Passengers evacuated from the lift line with evacuation drive after a power failure.
Minor	0	N/A	N/A	Door hinge damaged (broken roll pin)	A passenger attempted to load into the gondola after the "do not load" point. The door closed on the passenger and their equipment and the passenger was pushed back onto the loading platform.
Minor	0	N/A	N/A	Carrier damaged, deflector damaged	Tower 4 derailed on uphill side and missed cable catchers and the haul rope ended up approximately 2.5 metres above the snow surface.
Minor	0	N/A	N/A	None	An adult passenger raised the restraining bar before the "raise restraining device" sign. The safety bar bounced back up from position and hit another passenger (child) in the head, causing passenger to fall approximately 3 metres.
Minor	0	N/A	N/A	Groove in tower tube	A snowcat blade hit tower #18 while cleaning snow from the uphill side of the tower.
Minor	0	N/A	N/A	None	Evacuation drive was used to clear passengers from the lift line.
Minor	0	N/A	N/A	None	Evacuation drive was used to clear passengers from the lift line.
Minor	0	N/A	N/A	None	A passenger did not load correctly or slipped from carrier.
Minor	1	Elbow injured	Minor	None	Three passengers fell while loading onto the carrier, one passenger was injured.
Minor	0	N/A	N/A	Broken platter rope	Deropement on the down hill side of tower 4.

TABLE A-6: PASSENGER ROPEWAYS INCIDENTS (CONTINUED)

INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Minor	0	N/A	N/A	None	Upon starting a surface lift, the carrier swung excessively as it went around the return station bullwheel then struck the guide sheave assembly which caused the haul rope to derope from the guide sheaves.
Minor	0	N/A	N/A	Two bolts damaged	Two end cap retaining bolts failed on the chairlift's main sheave axle.
Minor	1	Neck pain when head tilted back; passenger hanging from chair by helmet strap	Major	None	A passenger (13 year old female) fell from carrier. Passenger was caught by her helmet during the fall and suspended by her helmet strap for an unknown length of time before falling to the snow surface.
Minor	1	Possible head, neck, abdomen injury	Major	None	A passenger (12 years old) was hit by a carrier while attempting to load.
Minor	0	N/A	N/A	Broken break-fork bracket	Evacuation due to component failure.
Minor	1	Laceration requiring stitches	Minor	None	A passenger did not load correctly and fell approximately 1.2m from the end of a loading dock.
Minor	1	Laceration requiring stitches	Minor	None	A passenger cut the back of his leg on a piece of exposed metal from the seat pad.
Minor	0	N/A	N/A	PLC I/O block damaged	Electrical fault at lower terminal of Village Gondola caused both ropeways to stop.
Minor	0	N/A	N/A	Zone D electric motor damaged	Gondola stopped/cabins not moving in Zone D of drive station terminal.

TABLE A-7: AMUSEMENT DEVICES INCIDENTS

INCIDENT RATING	QTY. INJURIES	INJURY DESCRIPTION	INJURY RATING	DAMAGE	INCIDENT DESCRIPTION
Major	1	Compound fracture	Major	None	A rider was launched from the zipline platform and was not connected to the zipline. The rider fell approximately five feet.
Minor	1	Redness on elbows and ankle	Minor	None	A rider on a skeleton sled skidded sideways in a corner and bounced off a lower wall, causing the sled to start bouncing off inside and outside track walls.
Minor	1	Lower back injury/STI	Major	None	A rider suffered a lower back injury while riding in bobsleigh. The passenger was able to walk away from bobsleigh after ride, but could not stand up again after lying down on a bench at the finish area.
Minor	1	Pain in tailbone area	Minor	None	A rider was injured when he contacted the zipline support tower.
Minor	1	Cut to rider's eyelid	Minor	None	Two riders (adult and child) fell from the cart as it was going around a corner.
Minor	1	Discomfort in left scapula area; sent to hospital for assessment	Minor	None	A rider (R1) was pushed by another rider (R2) in a pool of the tube ride. The tube tipped over and the rider (R1) struck his shoulder on the bottom of the pool.
Minor	1	Possible concussion	Major	None	A rider struck the back of its head on the bottom of the waterslide.
Minor	1	Bruised heels, ankles	Minor	None	A rider flew out of the waterslide flume at the second to last curve, landed in the pool but hit his/her heels on the deck.
Minor	1	Redness, swelling on hand	Minor	None	A rider's ring was caught when her hand ran over a jagged section on the outside edge of the flume.
Minor	1	Foot swollen, tenderness	Minor	None	A rider landed awkwardly as she entered the landing pool from the slide. Rider's foot twisted and felt a 'pop' in her foot.
Minor	0	N/A	N/A	Secondary brake lanyard damaged, removed from service	When rider hit the stop block, the break did not deploy correctly, forcing the passenger to hit and deploy the secondary brake.
Minor	0	N/A	N/A	Broken 10mm static brake rope	Primary brake rope broke as the rider was 'being braked' (sic). This break occurred when the rider was almost stopped and made contact with the secondary brake (secondary brake lanyard did not deploy).
Minor	1	Laceration requiring stitches, loose tooth	Minor	None	A rider was hit in face by carabiners from retrieval rope. This retrieval process occurs many times a day (over 50% of riders) and this is the first incident of this type.

Appendix B1: Enforcement Actions – Compliance Orders Issued in 2012

A Compliance Order is an enforcement document issued to a person by BC Safety Authority that specifies actions to be taken, stopped or modified where, in the opinion of BC Safety Authority, there exists a risk of personal injury or damage to property associated with work or products regulated by the *Safety Standards Act*. The following compliance orders were issued in 2012.

Notes:

- **BC Safety Authority is subject to the *Freedom of Information and Protection of Privacy Act*. Provincial legislation restricts the information that may be published with respect to individuals. Accordingly, BC Safety Authority may provide descriptions of enforcement actions taken but may not identify individuals by name. Corporate entities, however, may be identified by name.**
- **DBA represents "doing business as" and O/A represents "operated as".**

TABLE B1-1: ELECTRICAL COMPLIANCE ORDERS

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0003	ALTITUDE ELECTRIC LTD	Yes	Expired Permit	An assessment determined expired permits. The duty holder was ordered to perform an inspection of the work and submit a contractor's authorization, inspection request or declaration of compliance.
CO-2012-0004	KAMP ELECTRIC LTD	Yes	Expired Permit	An assessment determined expired permits. The duty holder was ordered to perform an inspection of the work and submit a contractor's authorization, inspection request or declaration of compliance.
CO-2012-0005	PERFORMANCE INSTALLATIONS LTD	Yes	Expired Permit	An assessment determined several expired permits. The duty holder was ordered to perform an inspection of the work and submit a contractor's authorization, inspection request or declaration of compliance.
CO-2012-0006	CBE BAKERY EQUIPMENT LTD	No	Sale of uncertified equipment	An assessment found regulated equipment that was not approved for use in BC in operation at a specific location. The duty holder was ordered to stop the sale of unapproved equipment unless it bears evidence of approval.
CO-2012-0007	An Individual	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence, qualifications or permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0008	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required licence and permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0009	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required licence and permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0010	An Individual	Yes	Outstanding non-compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0012	An Individual	Yes	Unsafe use of regulated equipment	An assessment determined an electrical contact incident occurred, placing a worker at risk of injury.
CO-2012-0020	BORDER PLUMBING & HEATING LTD	No	No contractor's licence	An assessment determined that regulated work had been completed without the required permit or licence. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0023	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been completed without the required permit, qualification or licence.
CO-2012-0024	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been completed without the required permit, qualification or licence. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0025	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been completed without the required permit, qualification or licence.
CO-2012-0026	QUALITECH SOUND & SECURITY LTD	Yes	Use of unqualified workers	An assessment determined that regulated work had been performed by an unqualified worker. The duty holder was ordered to stop allowing or directing unqualified individuals to perform regulated work.
CO-2012-0027	DARWIN ELECTRIC LTD	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit.
CO-2012-0028	AXIS TECHNICAL SERVICES CORPORATION	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit.
CO-2012-0029	ANMOL ELECTRIC LTD	Yes	Use of unqualified workers	An assessment determined that regulated work had been performed by an unqualified worker. The duty holder was ordered to stop allowing or directing unqualified individuals to perform regulated work.
CO-2012-0030	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been completed without the required permit, qualification or licence.

TABLE B1-1: ELECTRICAL COMPLIANCE ORDERS (CONTINUED)

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0031	CRYSTAL MOUNTAIN MANUFACTURING INC	No	Sale of uncertified equipment	An assessment found that the duty holder was offering for sale unapproved regulated equipment. The duty holder was ordered to stop selling regulated equipment unless the equipment bears evidence of approval, provide a list of all units sold, and remove from sale all equipment unless it bears evidence of approval.
CO-2012-0032	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been completed without the required permit, qualification or licence.
CO-2012-0035	An Individual	Yes	Expired Permit	An assessment determined an expired permit. No response was received from Safety Officer attempts at notification regarding this matter. The duty holder was ordered to perform an inspection of the work and submit a declaration of compliance for the installation.
CO-2012-0037	An Individual	No	Unsafe tampering or use of regulated equipment	An assessment determined a safety hazard with respect to a regulated installation. The duty holder could not provided evidence to demonstrate that he is qualified to perform electrical work, nor was evidence found to indicate that an electrical permit was obtained for this work at the time of inspection.
CO-2012-0038	NORTHLAND PROPERTIES CORPORATION	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0039	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0040	An Individual	No	Expired contractor's licence	An assessment determined that regulated work had been performed without the required licence and permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0041	B.C. FROZEN FOODS LTD	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0042	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0043	An Individual	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0044	CANADIAN NATIONAL TRANSPORTATIONS LIMITED LES TRANSPORTS NATIONAUX DU CANADA, LIMITEE	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0048	BALLY'S FAST ELECTRIC INC	Yes	No Permit	An assessment found regulated work performed without a permit. The duty holder was ordered to provide a record of permits obtained where work was performed that required a permit.
CO-2012-0049	An Individual	Yes	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0050	JAKES CONSTRUCTION LTD	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. No permit or certificate of qualification for performing regulated work could be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work and to provide a list of installations where regulated work had been completed without a permit having been obtained.
CO-2012-0054	RMS INDUSTRIAL MAINTENANCE LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence or permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0056	RELAMPING SERVICES CANADA LIMITED SERVICES RELAMPING CANADA LIMITEE	Yes	Expired Permit	An assessment determined expired permit(s). No response was received from Safety Officer attempts at notification regarding this matter. The duty holder was ordered to perform an inspection of the work and submit a declaration of compliance for each installation.
CO-2012-0059	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required licence, permit or certificate of qualification. The duty holder was ordered to stop performing regulated work. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0062	CUSTOM AIR CONDITIONING LTD	No	Expired contractor's licence	An assessment found regulated electrical work performed without a permit or valid licence. The duty holder was ordered to stop performing regulated electrical work for others and provide a record of permits for work performed where a permit was not obtained.
CO-2012-0063	VALLEY WIDE HOME IMPROVEMENTS LTD	No	Use of unqualified workers	An assessment identified unqualified individuals performing regulated work. The duty holder did not possess a licence and no permit was identified for the work found. The duty holder was ordered to stop performing regulated work and to provide records for regulated work performed.

TABLE B1-1: ELECTRICAL COMPLIANCE ORDERS (CONTINUED)

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0064	PORTER PETROLEUM EQUIPMENT REPAIRS INC	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work.
CO-2012-0065	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work and to provide records for regulated work performed.
CO-2012-0066	KUDRAT ELECTRIC LTD	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0067	COQUIHALLA MOTOR INN LTD	No	No Permit	An assessment determined that an operating permit was required for the operation or maintenance of a regulated product. The duty holder was ordered to obtain an operating permit.
CO-2012-0068	ROOHAM ELECTRIC LTD	Yes	No Permit	An assessment found regulated work performed without a permit. The duty holder was ordered to provide a record of permits obtained where work was performed that required a permit.
CO-2012-0069	SCORPIO ELECTRIC LTD	Yes	Performing regulated work beyond scope of qualifications	An assessment determined that regulated work had been performed beyond the scope of the individual's qualification. The duty holder was ordered to stop performing regulated work unless within the scope of his licence.
CO-2012-0070	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification and licence can be demonstrated.
CO-2012-0073	WATERTEC IRRIGATION LTD	No	Provide Records	An assessment found regulated work performed without a permit. The duty holder was ordered to provide a record of permits obtained where work was performed that required a permit.
CO-2012-0074	PRINS GREENHOUSES LTD	No	No Permit	An assessment determined that an operating permit was required for the operation or maintenance of a regulated product. The duty holder was ordered to obtain an operating permit.
CO-2012-0076	LIGHTNING ELECTRIC LTD	Yes	Expired Permit	An assessment determined expired permit(s). No response was received from Safety Officer attempts at notification regarding this matter. The duty holder was ordered to perform an inspection of the work and submit a declaration of compliance for each installation.
CO-2012-0077	An Individual	No	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop allowing regulated work to be performed unless the work is performed under a valid permit.
CO-2012-0078	POWER PROS ELECTRICAL LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0080	An Individual	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0081	OAKWOOD ENTERPRISES LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0084	HIGH COUNTRY POLE FENCES LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0086	SOUTHERN HOTELS INC	No	No Permit	An assessment determined that an operating permit was required for the operation or maintenance of a regulated product. The duty holder was ordered to obtain an operating permit.
CO-2012-0087	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0089	WESTVIEW MOTOR INN LTD	No	No Permit	An assessment determined that an operating permit was required for the operation or maintenance of a regulated product. The duty holder was ordered to obtain an operating permit.
CO-2012-0092	0935809 B.C. LTD	No	No Permit	An assessment determined that an operating permit was required for the operation or maintenance of a regulated product. The duty holder was ordered to obtain an operating permit.
CO-2012-0093	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required licence or qualification. The duty holder was ordered to stop performing regulated work.
CO-2012-0094	An Individual	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.

TABLE B1-1: ELECTRICAL COMPLIANCE ORDERS (CONTINUED)

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0099	SLATER ELECTRIC LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0101	An Individual	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0102	FIBERNET SERVICES 2006 LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required and to provide a record of work where work was performed that required a permit.
CO-2012-0103	An Individual	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0104	S.G. MECHANICAL INSTALLATIONS LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required and to provide a record of work where work was performed that required a permit.
CO-2012-0105	CHOPICK DEVELOPMENTS LTD	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0106	An Individual	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0107	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0108	CONNAUGHT MOTOR INNS LTD	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0109	OKANAGAN WELL & PUMP SERVICE INC	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required licence or qualification. The duty holder was ordered to stop performing regulated work and to provide a record of work performed previously, as referenced within a specific time period.
CO-2012-0110	B.K. TWO WAY RADIO LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0111	NEW-WAY ELECTRIC LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0113	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0114	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0116	T. MOSCONE & BROS. IRRIGATION CONTRACTORS LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0117	PRODUCTION SUPPLY CO. LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0118	An Individual	Yes	Expired Permit	An assessment determined expired permit(s). No response was received from Safety Officer attempts at notification regarding this matter. The duty holder was ordered to perform an inspection of the work and submit a declaration of compliance for each installation.
CO-2012-0119	An Individual	Yes	Expired Permit	An assessment determined expired permit(s). No response was received from Safety Officer attempts at notification regarding this matter. The duty holder was ordered to perform an inspection of the work and submit a declaration of compliance for each installation.
CO-2012-0120	BT EXCAVATING CONSTRUCTION LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0123	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.

TABLE B1-2: BOILERS, PRESSURE VESSELS, REFRIGERATION COMPLIANCE ORDERS

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0034	An Individual	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance, the duty holder was ordered to obtain the services of a licenced contractor to correct the non-compliances.

TABLE B1-3: GAS COMPLIANCE ORDERS

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0001	LAKEVIEW GEOTECH LTD	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0002	JUST GAS LTD	Yes	Use of unqualified workers	An assessment determined that regulated work had been performed by an unqualified worker. The duty holder was ordered to stop allowing or directing unqualified individuals to perform regulated work.
CO-2012-0011	An Individual	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0013	ACTION PLUMBING & HEATING INC	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0014	MENZIES PLUMBING & HEATING LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit.
CO-2012-0015	CENTRALAIRE LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit.
CO-2012-0016	OKANAGAN STAINLESS LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence or permit.
CO-2012-0017	MARWEST UTILITY SERVICES LTD	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence or permit.
CO-2012-0018	BORDER PLUMBING & HEATING LTD	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0019	An Individual	Yes	Expired certificate of qualification	An assessment determined that regulated work had been completed without the required permit, licence or qualification. The duty holder was ordered to provide a list of installations where regulated work had been completed.
CO-2012-0021	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required qualification. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0022	PREMIUM COMFORT HEATING & AIR CONDITIONING LTD	Yes	Use of unqualified workers	An assessment determined that regulated work had been performed by an unqualified worker. The duty holder was ordered to stop allowing or directing unqualified individuals to perform regulated work.
CO-2012-0033	KEITH PLUMBING & HEATING CO LTD	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit.
CO-2012-0036	An Individual	Yes	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0045	DAYLIGHT PLUMBING, HEATING & GAS LTD	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0046	DASMESH PLUMBING HEATING & REPAIRS LTD	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0047	MODULUX DESIGN LTD	Yes	Performing regulated work beyond scope of qualifications	An assessment determined that regulated work had been performed beyond the scope of the duty holder's qualifications. The duty holder was ordered to stop performing regulated work unless the work can be demonstrated to be within the scope of the particular qualification.
CO-2012-0051	JOE'S PLUMBING & HEATING LTD	Yes	No Permit	An assessment determined that regulated work had been completed without the required permit. The duty holder was ordered to provide a list of installations where regulated work had been completed without a permit having been obtained.
CO-2012-0053	SBC FIREMASTER LTD	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.

TABLE B1-3: GAS COMPLIANCE ORDERS (CONTINUED)

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0055	An Individual	No	Expired certificate of qualification	An assessment determined that regulated work had been performed without the valid certificate of qualification and licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0057	INTERIOR COMFORT HEATING & COOLING LTD	Yes	Failure to take regulated safety precautions	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work and to perform the work in a safe and competent manner.
CO-2012-0058	An Individual	Yes	Failure to address a safety hazard	An assessment determined a safety hazard with respect to a regulated installation. As the duty holder failed to respond to Safety Officer notifications stipulating a deadline for correction, the duty holder was ordered to correct the safety hazard.
CO-2012-0060	625131 B.C. LTD	No	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0061	An Individual	No	No valid BC certificate of qualifications	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop performing regulated work.
CO-2012-0071	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification and licence can be demonstrated.
CO-2012-0072	AQUARIUS METAL FABRICATORS INC	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0075	An Individual	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0079	688870 BC LTD	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0082	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0088	An Individual	No	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0090	An Individual	Yes	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification or licence. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification can be demonstrated.
CO-2012-0091	An Individual	Yes	Failure to address a safety hazard	An assessment identified non-compliances with respect to regulated work. The duty holder failed to respond to Safety Officer notifications stipulating a deadline for compliance.
CO-2012-0095	An Individual	Yes	No contractor's licence	An assessment determined that regulated work had been performed without the required licence or permit. The duty holder was ordered to stop performing regulated work for others.
CO-2012-0096	An Individual	Yes	No valid BC certificate of qualifications	An assessment determined that regulated work had been performed without the required certificate of qualification, licence or permit. The duty holder was ordered to stop performing regulated work unless evidence of a valid qualification and licence can be demonstrated.
CO-2012-0097	CHAPMAN MECHANICAL LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0098	VAGABOND INVESTMENTS LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0100	600710 B.C. LTD	Yes	Use of unqualified workers	An assessment identified an individual performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.
CO-2012-0112	GUARDIAN HEATING & AIR CONDITIONING INC	Yes	Use of unqualified workers	An assessment identified individual(s) performing regulated work. A certificate of qualification for performing regulated work could not be produced. The duty holder was ordered to stop allowing unqualified individuals to perform regulated work.

TABLE B1-3: GAS COMPLIANCE ORDERS (CONTINUED)

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0115	An Individual	No	Failure to take regulated safety precautions	An assessment determined a safety hazard with respect to a regulated installation. The duty holder failed to respond to notifications to stop using regulated equipment in a manner that is unsafe or that creates a hazard. The equipment was removed from use.
CO-2012-0121	STEVENSON MECHANICAL LTD	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.
CO-2012-0122	An Individual	Yes	No Permit	An assessment determined that regulated work had been performed without the required permit. The duty holder was ordered to stop performing work without a permit where a permit is required.

TABLE B1-4: ELEVATING DEVICES COMPLIANCE ORDERS

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0083	BRADSHAW CONSTRUCTION COMPANY LTD	No	Outstanding non - compliance(s)	An assessment identified non-compliances with respect to regulated work. The duty holder failed to reapond to Safety Officer notifications stipulating a deadline for compliance.

TABLE B1-5: AMUSEMENT DEVICES COMPLIANCE ORDERS

COMPLIANCE ORDER NO.	ISSUED TO	DUTY HOLDER HAS LICENCE OR BCSA QUALIFICATION YES/NO	CATEGORY	DESCRIPTION
CO-2012-0052	JUMP AROUND PROMOTIONS INC	No	No contractor's licence	An assessment determined that regulated work had been performed without the required licence or permit. The duty holder was ordered to stop performing regulated work for others.

Appendix B2: Enforcement Actions – Monetary Penalties Issued in 2012

A Monetary Penalty is an administrative penalty levied by a Safety Manager in amounts up to a maximum of $100,000 to penalize non-compliant behavior. The following Monetary Penalties were imposed by BC Safety Authority in 2012.

Note:
BC Safety Authority is subject to the *Freedom of Information and Protection of Privacy Act*. Provincial legislation restricts the information that may be published with respect to individuals. Accordingly, BC Safety Authority may provide descriptions of enforcement actions taken but may not identify individuals by name. Corporate entities, however, may be identified by name.

INDUSTRY SECTOR	NUMBER	DUTY HOLDER HAS BCSA LICENCE OR QUALIFICATION YES/NO	ISSUED TO	CATEGORY	DESCRIPTION
Electrical	MP-2012-0002	No	An individual	No valid BC certificate of qualifications.	A $1,500 Monetary Penalty was imposed on the duty holder for performing regulated work without the required permit, qualification and/or licence.
Electrical	MP-2012-0010	No	OK MOTEL & MOBILE HOME PARK LTD.	Outstanding non - compliance(s)	A $2,500 Monetary Penalty was imposed on the duty holder for failure to comply with a Compliance Order requiring correction of non-compliances identified on a certificate of inspection.
Electrical	MP-2012-0007	No	An individual	Outstanding non - compliance(s)	A $500 Monetary Penalty was imposed on the duty holder for failure to comply with a Compliance Order requiring correction of non-compliances identified on a certificate of inspection.
Gas	MP-2012-0008	Yes	GUARDIAN HEATING & AIR CONDITIONING INC.	No valid BC certificate of qualifications.	A $1,500 Monetary Penalty was imposed on the duty holder for performing work without the required permit or certificate of qualification.
Gas	MP-2012-0009	No	RISKE CREEK MANUFACTURING LTD.	No valid BC certificate of qualifications.	A $4,000 Monetary Penalty was imposed on the duty holder for performing work without the required license or certificate of qualification.
Elevating Devices	MP-2012-0001	No	CANADA CONSTRUCTION LIFTS LTD.	Performing regulated work without the required permission.	A $1,500 Monetary Penalty was imposed on the duty holder for performing regulated work without the required permission.
Elevating Devices	MP-2012-0005	Yes	SCHINDLER ELEVATOR CORPORATION	Failure to take regulated safety precautions	A $10,000 Monetary Penalty was imposed on the duty holder for failure to comply with a Safety Order, in particular to complete the driving machine brake maintenance requirements.

Appendix C: Regulatory Instruments and Amendments

BC Safety Authority uses certain regulatory instruments to assist with the administration of the *Safety Standards Act* and the *Railway Safety Act*.

- Safety Orders are issued to prevent or reduce the risk of personal injury or damage to property. Compliance is mandatory.
- Directives are instruments that clarify or provide new interpretation of a regulation or code. Compliance is mandatory.
- Information Bulletins provide helpful information and clarification on existing regulations or codes.

This appendix provides details regarding the Safety Orders, Directives and Information Bulletins issued by BC Safety Authority in 2012. Regulatory amendments are also included in this listing.

INDUSTRY SECTOR	INSTRUMENT TYPE	ISSUE DATE	DOCUMENT NO.	TITLE	DESCRIPTION
Passenger Ropeways	Safety Order	23-Jan-12	SO-PR 2012-01	Above-surface Fixed Grip Passenger Ropeways - Rope Grip Installation and Resistance to Sliding	This Safety Order was issued to all passenger ropeway contractors that maintain above-surface fixed grip passenger ropeways. BCSA received two incident reports within 30 days where the rope grip failed to maintain the required resistance to sliding on the haul rope. Both incidents resulted in carriers sliding backwards.
Passenger Ropeways	Safety Order	13- Sep-12	SO-PR 2012-02	Leitner Poma "X-Y" Sheave Assembly Axle Adjustment Bolts	This Safety Order replaced an earlier Safety Order relating to structural bolt failures in a specific type of passenger ropeway. The safety control plan detailed in the previous Safety Order was determined to not be a viable solution. As a result, this new Safety Order requires all equipment owners to replace the bolts under question with stronger ones and further perform non-destructive testing on these new bolts following limited use.
Passenger Ropeways	Safety Order	24- Sep-12	SO-PR 2012-03	Doppelmayr DS Series Detachable Grip Fixed Jaw Failures	This Safety Order was issued to owners of a specific type of above-surface passenger ropeway utilizing a detachable grip. Failures in this type of grip were first addressed in a bulletin released by the manufacturer in 1997 however few owners in BC had complied with the bulletin. This Safety Order requires all owners to comply with periodic inspection, testing, maintenance and repair procedures set out by the manufacturer as well as submit maintenance and repair records to the BCSA on an ongoing basis.
Elevating Devices	Safety Order	19-Mar-12	SO-ED 2012-01	ThyssenKrupp Northern Elevator Traction Sheave Brake (Sheave Jammer) Maintenance	This Safety Order replaced an earlier Safety Order relating to maintenance requirements for "Sheave Jammer" traction braking devices. The manufacturer had updated the maintenance manual attached to the Safety Order.
Electrical	Safety Order	8-May-12	SO-EL 2012-01	Electrical Equipment Located in Sawmills	This Safety Order was issued to owners and operators of sawmills in the Province using electrical equipment. The order requires the owner or operator to: • verify they have a valid electrical operating permit; • develop a process for reporting incidents involving electrical work or equipment; • report any incidents that have occurred since January 2010;and, • verify that electrical equipment is free of combustible or explosive materials.
Electrical	Safety Order	29-June-12	SO-EL 2012-02	Sicamous Flood Hazard June 2012	A Safety Order was issued to BC Hydro requiring the disconnection of some of their clients because of the electrical risks of fire and shock hazards associated with flooding. A total of 35 homes were impacted by this order which was made after a home that was flooded caught fire.
Electrical	Safety Order	18 –Sept-12	SO-EL 2012-03	Electrical Equipment Located in Wood Pellet Manufacturing Plants	This Safety Order was issued to owners and operators of wood pellet manufacturing plants requiring them to: verify that an operating permit is in place; implement a process to report electrical equipment incidents and report if any have occurred since January 2010; verify interior of electrical equipment is free of combustible particles; verify that electrical cabinets are closed and a process is in place to keep them closed and secure; verify that ventilation system are working in accordance with manufacturers instructions and that a process is in place to ensure they are functional; and, submit a report.
Gas	Safety Order	5-Dec-12	O-GA 2012-01 Revision 1	Installation or Use of Majestic Fireplace – Direct Vent Free Standing Gas Fireplace - Prohibited	This Safety Order replaced a previously issued Safety Order relating to a product prohibition on specific free standing gas fireplaces. This Safety Order was revised to exclude certain product lines from the prohibition since these particular product lines were redesigned to account for the safety issues identified in the earlier models.
Gas	Safety Order	25-Sep-12	SO-GA 2012-01	Installation or Use of Majestic Fireplace – Direct Vent Free Standing Gas Fireplace - Prohibited	This Safety Order was issued to prohibit the installation, use, or sale of a specific free standing fireplace in BC. Following a number of reported incidents throughout Canada, and independent third party testing, this product was found to present a serious safety hazard. At the time of issuance, the manufacturer was no longer in business nor was a retro fit kit ever made available to address the safety hazard.

(CONTINUED)

INDUSTRY SECTOR	INSTRUMENT TYPE	ISSUE DATE	DOCUMENT NO.	TITLE	DESCRIPTION
Gas	Directive	08-Mar-12	D-G5 070628 5 Revision 3	Gas Directive Plastic Venting	This Directive was issued in response to findings where some certified products endorse the use of plastic vents components that are contrary to adopted codes and standards. This Directive clarifies acceptable plastic vent installations and provides instructions for required maintenance and replacement for previously installed plastic venting.
Gas	Directive	27-Aug-12	D-GA 2012-01 Revision 1	Replacement Appliance Permit Decals	This Directive outlined the Replacement Appliance Decal Program as an alternative to obtaining individual installations permits when replacing specific types of gas appliances.
Gas	Directive	5-Sep-12	D-GA 2012-02	Requirements for Connection of Fuel Supply to Mobile and Manufactured Housing, and Recreational Vehicles.	This Directive was issued to clarify the permitting and qualification requirements for gas supply connections to mobile housing units and recreational vehicles.
Gas	Directive	5-Sep-12	D-GA 2012-03	Propane Regulator Installation	This Directive was issued to clarify installation requirements of propane regulators in vapour service.
Gas	Directive	1-Nov-12	D-GA 2012-04	Propane Vaporizer Approval for BC	This Directive was issued to clarify that propane gas-fired vaporizers will require evaluation and approval from the Provincial Gas Safety Manager prior to use in British Columbia.
Gas	Directive	1-Nov-12	D-GA 2012-05	Propane Regulator Operational Requirements	This Directive clarifies the operational and installation requirements for regulators utilized on propane installations are to be in compliance with the current edition of CAN/CSA B149.1 Installation Code.
Elevating Devices	Directive	10-Apr-12	D-L4 110803 5 Revision 2	Major and Minor Alterations	This Directive was revised in April to update document filing requirements for major and minor alterations to elevating devices for a Directive issued in 2011.
Boilers, Pressure Vessels and Refrigeration	Directive	15-Feb-12	D-BP 2012-01	Recognition to Administer Welder Qualification Tests	This Directive established criteria for organizations seeking to be recognized as competent to administer performance qualification tests for pressure welders.
Boilers, Pressure Vessels and Refrigeration	Directive	25-Jan-12	D-BP 2011-01 Revision 1	Inspection Requirements for Piping Systems and Piping Components	This Directive revised an earlier Directive which clarified inspection requirements for non-boiler external piping system components.
Boilers, Pressure Vessels and Refrigeration	Directive	11-May-12	D-BP 2012-02	Electrical and Gas work carried out by Power Engineers	This Directive further clarified what electrical and gas work could be performed by power engineers in a plant.
Boilers, Pressure Vessels and Refrigeration	Directive	11-May-12	D-BP 2012-03	Temporary absence of Chief Engineer	This Directive clarified the processes to be followed by owners of plants during the temporary absence of the chief power engineer.
Electrical	Directive	17-Apr-12	D-EL 2012-01	BC Electrical Code Section 26 (Installation Of Electrical Equipment)	This Directive clarifies the interpretation of how access can be provided to a panelboard supplying power to a secondary suite and where receptacles are required.
Electrical	Directive	1-Oct-12	D-EL 2012-02	BC Electrical Code Section 6 (Services and Service Equipment)	This Directive clarifies the requirements for location of consumers' service equipment and conductors and is supported by Information Bulletin 1B-EL-2012-03.s.
Gas	Information Bulletin	17-May-12I	B-GA 2012-01	Propane Cylinder Filling Requirements	This Information Bulletin was issued to authorized propane refueling centers and reminds them of the standard requirements when filling/refilling propane cylinders.
Gas	Information Bulletin	9-Nov-12	IB-GA 2012-02 Revision 1	Gas Venting Certificate of Qualification	This Information Bulletin clarifies the scope of work for individuals holding the Gas Venting certificate of qualifications. This bulletin was updated to include context and clarification in relation to today's modern gas systems and appliances.
Gas	Information Bulletin	29-May-12	IB-G5 070322 1 Revision 1	Coleman Furnace Failures	This Information Bulletin was revised in 2012 and notifies homeowners of recent failures of Coleman furnaces. This Information Bulletin also provides homeowners with recommendations for the ongoing servicing and maintenance of these furnaces.
Electrical	Information Bulletin	20-July-12	IB-EL 2012-01	2012 BC Electrical Code Adoption	This bulletin issued in the third quarter provides notification on the new electrical code taking effect on October 1st, 2012.
Electrical	Information Bulletin	21-Sept-12	IB-EL-2012-02	BC Hydro Notification of Changes	This Bulletin gives notice that BC Hydro requires electrical service connection documentation to be submitted by email to one of six email addresses.

(CONTINUED)

INDUSTRY SECTOR	INSTRUMENT TYPE	ISSUE DATE	DOCUMENT NO.	TITLE	DESCRIPTION
Electrical	Information Bulletin	1-Oct-12	IB-EL 2012-03	Services and Service Equipment	This Information Bulletin supplements Directive D-EL 2012-02 and provides guidance on: • services to low buildings; • location of consumer's service equipment and panelboards; • panelboards in secondary suites; • outdoor services; and • meters location of consumer's service conductors.
Electrical	Information Bulletin	1-Oct-12	IB-EL 2012-04	Section 4 - Conductors	This Information Bulletin replaces Directive D E3 0703022 4 and provides guidance on sizing of neutral conductors.
Electrical	Information Bulletin	1-Oct-12	IB-EL 2012-05	Section 2 - General Rules	This Information Bulletin replaces Directive D E3 101110 2 and provides guidance on: • plans and specifications; • ventilation; • electrical maintenance; • adequate working space; and • flame spread requirements for electric wire and cable protection for electrical workers.
Passenger Ropeways	Information Bulletin	19-Oct-12	IB-PR 2012-01	Passenger Ropeway Work Carrier and Machine Guarding Safety – Procedure Review	This Information Bulletin warns passenger ropeway contractors of potentially unsafe conditions arising from work carrier operations and removal of machine guarding.
Electrical	Recommendation for Amendment, and Regulatory Amendment	5-Apr-12	N/A	N/A	A Recommendation for Amendment concerning adoption of the 2012 edition of the Canadian Electrical Code Part I was submitted on April 5, 2012. On July 5, 2012 the Minister of Energy and Mines approved a Ministers Order #147 adopting the code for use in BC. As requested, the requirement to use the new code came into effect on October 1, 2012.
Boilers, Pressure Vessels and Refrigeration	Recommendation for Amendment	28-Aug-12	N/A	N/A	A Recommendation for Amendment was submitted to the Province on August 28, 2012 to propose the adoption of new editions of three codes. One CSA piping code and two ASME manufacturing codes were updated by their respective code authoring bodies in 2012.
Elevating Devices	Recommendation for Amendment	23-Apr-12	N/A	N/A	A Recommendation for Amendment was submitted to the Provincial Government that proposed the adoption of the 2009 edition of the CSA B355 code for Lifts for Persons with Physical Disabilities. A small number of BC variations were proposed following consultations with stakeholders. Housekeeping measures for the Elevating Devices Safety Regulation were also proposed to eliminate any conflicts with the new edition of the B355 Code.
Elevating Devices	Recommendation for Amendment	12-Dec-12	N/A	N/A	A Recommendation for Amendment was submitted to the Province on December 12, 2012 concerning the establishment of elevating device mechanic certification in BC. Four classes of certificates are being proposed with a set of work and education requirements comparable to those established in other provinces.
Railways	Recommendation for Amendment	26-Nov-12	N/A	N/A	A Recommendation for Amendment was submitted to the Province on November 26, 2012 requesting amendments to clarify adopted federal provisions and clarify roles and responsibilities for BC Safety Authority and the Ministry of Transportation and Infrastructure.

Appendix D: Industry Associations and National Codes & Standards Committees

in which BC Safety Authority Participated

BC Safety Authority employees participate in industry associations and lead many technical code and standard developments. Participation ensures that challenges facing BC industries are represented and inform the development of national codes and standards. The following lists those Industry Associations and National Codes and Standards Associations that BCSA employees participated in during 2012.

INDUSTRY SECTOR	ASSOCIATIONS AND NATIONAL CODES & STANDARDS COMMITTEES
Amusement Devices	• CAN/CSA Z267-00 Harmonization Committee • ASTM F24 – Standards Development for Amusement Rides/Devices (Harmonization Committee)
Boilers, Pressure Vessels and Refrigeration	• Association of Chief Inspectors Technical Committee • CSA B51 Subcommittee • Nation Board of Boiler Inspectors General Meeting • Standardization of Power Engineers Examination Committee • Interprovincial Power Engineering Curriculum Committee
Electrical	• Committee on Canadian Electrical Code, Part I – Canadian Standards Association • ULC Advisory Council - Underwriters Laboratories of Canada
Elevating Devices	• Association of Provincial Chief Elevator Inspectors • CSA Advisory Council on Elevating Devices • Canadian Standards Association CSA-B44 Elevator Safety Code • Canadian Standards Association CSA-B44/ASME A17.5 Elevator & Escalator Electrical Equipment
Code	• Canadian Standards Association CSA-B311 Manlifts Safety Code • Canadian Standards Association CSA-B355 Lifts for Persons with Physical Disabilities Safety Code • Canadian Standards Association CSA-Z185 for Personnel Hoists • APEGBC Building Codes Committee • ASME A17 Standards Committee for Elevators and Escalators • National Association of Elevator Safety Authorities (NAESA)
Gas	• CSA B149.1 Code Committee • CSA B149.2 Code Committee • CSA B149.3 Code Committee • CSA B149.5 Code Committee • BC Common Ground Alliance • Canadian Propane Association Ad hoc committee • Curriculum review committee • Examination requirements for alternative fuel certification
Passenger Ropeways	• CAN/CSA Z98 Technical Committee (Vice Chair) • Canada West Ski Areas Association • International Meeting of Technical Supervisors in Ropeway Engineering (ITTAB)
Railways	• Advisory Council on Railway Safety • Western Provincial Railway Safety Committee

Appendix E: Education Activity

Education Activity Descriptions

Electrical Tech Talks: presentations and supporting documents that educate client groups about specific technical risks and issues.

Carbon Monoxide – Targeted Incident Reduction: a targeted public awareness program aimed at specific groups that are at risk of carbon monoxide poisoning or death.

Gas Tech Talks: presentations and supporting documents that educate client groups about specific technical risks and issues.

(Have a) Safe Ride: a public awareness program aimed at users of passenger ropeways at risk for falls from carriers at height.

RESPECT: a public awareness-oriented program, delivered in collaboration with industry, aimed at safe behaviour on and around railway tracks and crossings.

Think Permit: a public awareness program targeted at homeowners doing or planning home renovations involving regulated gas and/or electrical work.

Elevating Devices Mechanics Certification: a client awareness program that promotes the requirements of the new Elevating Devices Mechanics Certification program.

Boilers and Pressure Vessels Tech Talks: presentations and stand-alone materials that educate clients about specific technical risks and issues.

Program Activities Defined

Direct Reach: the number of clients, their employees, or members of the public reached directly by members of BCSA through targeted program activities (i.e. Tech Talks, attendance at trade shows).

Indirect Reach: the estimated number of individuals who will be exposed to program print materials (i.e. through ads on Facebook, ads in the Hunting and Trapping Synopsis). Note: does not reflect the number of unique individuals reached, as one individual may be reached through multiple channels

Activities: all forms of outreach used in support of education programs, including face-to-face, print media and online (i.e. Tech Talk sessions, print ads in targeted publications, web ads).

New Development: number of new program deliverables developed (i.e. new Tech Talks, new program materials).

Media: number of times media cover BCSA education activities (i.e. Summerland Review news coverage of Railway RESPECT program at Giant's Head Elementary School).

Collaborations: number of industry groups that collaborated with BCSA to deliver education programs (i.e. Kettle Valley Steam Railway (KVSR) on RESPECT program, or Cypress Mountain on Have a Safe Ride program).

Client Satisfaction: client satisfaction ratings, gathered through feedback forms after program delivery (i.e. Tech Talks).

TECH TALKS IN 2012

TITLE / TOPIC	DESCRIPTION	QTY. OF PARTICIPANTS
ELECTRICAL		
2012 Electrical Code Changes	This series of Tech Talks guides participants through the key changes in the 2012 BC Electrical Code. Reviewed section by section, the talks highlight changes from CSA and BC Amendments. The presentation is offered in 4, approximately 2 hour modules and in some cases it is available in one day. Contractors and others will find that section 4 regarding ampacity changes substantially changes installation requirements. There is also an entirely new section 64, Renewable Energy Systems.	2,393
101 Things Every Electrician Should Know	This Tech Talk reviews rules and regulations that apply to day-to-day work that participants should be familiar with. This talk is organized as a Q&A quiz: questions are posed, answers given, and the applicable rule or regulation is highlighted. Discussion is encouraged.	23
Arc Flash	This talk covers the changing attitudes toward electrical safety, applicable acts and regulations, electrical hazards, and risk management. Specific topics include identifying hazards, prevention practices, forms of Personal Protective Equipment (PPE) and safety training.	175
Barn Wiring	This Tech Talk is oriented toward electricians, electrical contractors, and any individual who might consider wiring their own barn or out-building. Participants examine the unique conditions associated with wiring barns safely for their inhabitants, applicable electrical and building codes, wiring requirements, and bio-security issues.	24
Disposal or Sale of Manufactured Homes	This talk is oriented toward professionals (i.e. real estate agents) who deal with the disposal and sale of these homes, and electricians and electrical contractors who work on manufactured homes. Topics include applicable regulations and directives, the seller's responsibilities in the transaction, the process for obtaining BCSA approval for wiring, and requirements and processes for equipment labels.	197
Generators	This talk covers codes and regulations that apply to installation, maintenance and testing of generator systems, and other general requirements for these systems. Specific topics include loading and sizing, transfer switches, grounding and bonding, and applicable wiring methods.	16

TECH TALKS IN 2012 (CONTINUED)

TITLE / TOPIC	DESCRIPTION	QTY. OF PARTICIPANTS
ELECTRICAL (CONTINUED)		
Low Voltage Services Part I	This talk focuses on services less than 750 volts or residential or commercial services to 400 amps, applicable codes, regulations, directives and advisories. Specific topics include overhead services, underground services, supply services permitted, system grounding, temporary power connections, wiring methods, and BC Hydro requirements.	38
Low Voltage Services Part 2	Part 2 of this topic includes applicable codes and regulations, and the implications of federal legislations (Bill C-45) for worker safety. Specific topics include shock and arc flash protection, hazard and risk assessment, Personal Protective Equipment (PPE), and employer and employee responsibilities for safety and training.	24
GAS		
2010 Gas Code Changes	This presentation includes a review of the changes to the 2010 B149 Natural Gas & Propane Installation Code. Sections 4, 5, 6, 7 and 8 are reviewed in detail and the specific code changes highlighted.	511
A Conversation about the 2010 Code	This talk covers the key changes to the 2010 B149 code in a discussion format.	58
2012 Gasfitter & Contractor Technical Information Seminar	This interactive presentation brought together participants in the safety system to discuss changes and new initiatives at BCSA and in the gas industry.	107

PUBLIC AWARENESS ACTIVITIES IN 2012

TITLE / TOPIC	DESCRIPTION	QTY. OF PARTICIPANTS
Carbon Monoxide: Be in the Know	This program delivered the message "Leave it Outside" to campers and RV-ers, creating awareness of the risks of carbon monoxide poisoning associated with incorrect use of portable propane. Through direct interaction with campers in campsites, distributing material through RV dealers, and social media advertising, the program recorded significant reach in 2012.	1,541,517
Think Permit	Think Permit targets homeowners with information about the importance of obtaining permits for regulated electrical and gas work. Program materials were distributed through municipal governments permit offices, and collaboration with home improvement retail stores was piloted.	9,908
Have a Safe Ride	Two on-mountain events promoted the messages about riding chairlifts safely. Participants were given tip cards and branded sunglasses, invited to play the "Powder Patrol" game online, and enter an online contest.	1,400
RESPECT (Railway Education Safety Program: Examining Crossing and Trespassing)	Reducing the number of injuries and fatalities associated with unsafe crossing or trespassing on railway tracks is the goal of this program. In 2012, Kettle Valley Steam Railway supported delivery of the program at Giant's Head Elementary School by sponsoring a poster contest for students up to grade 7. BCSA Safety Officers also made 9 presentations at the school.	274

Appendix F: Listing of Media Relations Actions

In 2012, BC Safety Authority took the following media relations actions to raise awareness of safety hazards and reduce risk and to provide comment and context to safety issues that were of interest to the media.

DATE	TITLE	ACTION	INDUSTRY SECTOR	SYNOPSIS
January 6 April 27 July 03	Gas and Electrical Safety in Floods	Media Release	Electrical, Gas	Sent out three times in the first half of 2012 due to heavy snowpack and expected flooding. Electrical equipment and gas appliances exposed to flood waters can be dangerous if re-energized and used without being properly inspected by a licensed contractor. BCSA reminds homeowners and businesses to take precautions with gas and electrical appliances when flooding is expected.
January 31	BCSA explains actions taken regarding a 2011 sawmill incident	Media Interview	Electrical	A Safety Manager provided comment and context to several members of the media to explain actions taken regarding a 2011 sawmill incident.
March 24 September 19	BCSA addresses concerns from the Electrical Contractors Association of BC	Media Interview	Electrical	A Safety Manager provided comment and context to media inquiries regarding concerns from the Electrical Contractors Association of BC on an application from the Applied Science Technologists and Technicians of BC (ASTTBC). The application was for Recognition of Training for Limited Scope Electrical Workers. The BCSA has reviewed and approved the application.
March 27	2011 Summary of Enforcement Actions	Media Release	All	Sent to trade publications to inform clients/industry about enforcement activities. In 2011, BCSA took 195 enforcement actions against contractors, equipment owners and others doing work in BCSA-regulated industry sectors for failing to comply with safety requirements and unlawfully performing regulated work.
April 30	Do You Smell Something?	Media Release	Gas	Sent to all BC media to promote propane safety in recreational vehicles (RVs). Explosions and carbon monoxide poisonings due to propane leaks are rare, but they are still a risk worth considering before using your recreational vehicle. The propane system in a recreational vehicle must be well-maintained and properly used to prevent accidents and injury.
May 8	BC Safety Authority issues Safety Order	Media Release	Electrical	Sent to all BC media to inform public about BCSA Safety Order to mills relating to regulated electrical equipment ordering sawmills to verify that they have valid operating permits in place, that proper maintenance procedures are being carried out, and that incidents are being reported as per existing BCSA Directives.
July 19	Flood Safety Information for the Sicamous Area	Media Release	Electrical, Gas	Sent to local Sicamous media in wake of flooding to provide residents with safety information.
August 1	Are you grilling during the long weekend? Do it safely!	Media Release	Gas	Sent out annual camping/grilling safety release to support the carbon monoxide awareness program leading up to the August long weekend. Using propane comes with inherent risks if used inappropriately. Serious accidents can be prevented by checking the equipment set up before using it.
August 15	January to June 2012 enforcement actions	Media Release	All	Sent to trade publications to inform clients/industry about enforcement activities. BCSA took 59 enforcement actions between January 1 and June 31, 2011 to promote compliance with safety standards and legislation.
September 4	BCSA addresses media inquiry regarding a Safety Order for changes to single bottom cylinder elevators	Media Interview	Elevating	The Elevating Devices Safety Manager provided comment and context to issues raised regarding required changes to single bottom cylinder elevators. The importance of addressing safety issues was emphasized.
September 28	BCSA warns against unsafe gas work	Media Release	Gas	Sent out to select community papers where unsafe gas work may have been performed by an identified contractor. This also served as an appeal for the public to report any gas work done by the contractor.
October 1	Is your home safe for cooler fall weather?	Media Release	Gas	Sent to BC community papers as a reminder on appliance maintenance and use of carbon monoxide detectors especially as colder weather increases usage of gas-fired appliances.
October 1	BCSA addresses media inquiry regarding gas line hits	Media Interview	Gas	The Gas Safety Manager provided comment and context to gas line hit issues. The importance of safe digging practices and calling BC One Call were emphasized.

Appendix G: Local Government Administration of the *Safety Standards Act*

The Province of British Columbia has delegated partial administration of the *Safety Standards Act* to a number of local governments.

Local governments that have administrative responsibility for the electrical technology:

- City of Burnaby
- City of North Vancouver
- City of Surrey
- City of Vancouver
- City of Victoria
- Corporation of the District of Maple Ridge
- District of North Vancouver
- Municipality of West Vancouver

Local governments that have administrative responsibility for the gas technology:

- City of Burnaby
- City of Kelowna
- City of North Vancouver
- City of Richmond
- City of Vancouver
- Corporation of the District of Maple Ridge
- District of North Vancouver

Local governments that administer gas assessment programs for detached dwellings with gas services at a pressure of 14.0 kPa gauge or less as well as other buildings with gas services at a pressure of 14.0 kPa gauge or less with a total connected load for the meter of 120 kW or less.

Appendix H: Definitions

Assessment
An evaluation or review of regulated work that may include physical inspection or audit.

Audit
A review focused on the safety outcomes of a system or process.

Certificate of Inspection
A document issued by BC Safety Authority upon completion of an inspection. This document identifies any non-compliances with respect to the regulated work or regulated product that must be corrected by the permit holder.

Certificate of Qualification
A certificate issued by BC Safety Authority to an individual who provides evidence of his/her knowledge and ability to do regulated work in a manner that meets the requirements under the *Safety Standards Act* and which allows an individual to perform regulated work in British Columbia within the scope of the certificate.

Compliance Order
A document issued to a person or company by BC Safety Authority that specifies actions to be taken, stopped or modified where, in the opinion of BC Safety Authority, there exists a risk of personal injury or damage to property associated with work or products regulated by the *Safety Standards Act*.

Directive
A regulatory instrument that clarifies or provides new interpretation, application or operation of a regulation or code. Compliance is mandatory.

Discipline Order
A document issued by BC Safety Authority to a person performing regulated work who:

- is in breach of a condition of, or restriction on, any licence or permission;
- practices in a discipline under the *Safety Standards Act* for which the contractor is not licensed or qualified;
- fails to comply with a Compliance Order or Safety Order
- fails to comply with a requirement, term or condition of an Alternative Safety Approach or;
- is convicted of an offense under the *Safety Standards Act*.

Compliance with a Discipline Order is mandatory.

Incident
An event that occurred as a result of regulated work or equipment that either caused death, personal injury or damage to property, or created a risk of personal injury or damage to property.

Severe incident
An event that either caused or was likely to have caused fatal or permanent injury. Severe incidents may also be referred to as "Level 1" incidents.

Major incident
An event that either caused or was likely to have caused major injury and/or extensive property or equipment damage. Major incidents may also be referred to as "Level 2" incidents.

Minor incident
An event that caused or was likely to have caused minor injury and/or minor property or equipment damage. Minor incidents may also be referred to as "Level 3" incidents.

Note: Incidents identified as UNDER INVESTIGATION were open at the time of report preparation. Information related to open investigations is subject to change and verification; therefore, discussion of these incident details is excluded.

Information Bulletin
A document issued to provide helpful information and clarification on existing regulations or codes.

Injury
Any physical damage to the body caused by an event that occurs as a result of regulated work or equipment, further classified as:

Fatal injury
An injury causing death.

Major injury
An injury that involves long-term impairment of function or loss of function of any body part, organ or mental faculty, significant physical pain and some disability or loss of function; examples include fractures, internal injuries or wounds that are serious but may be not life-threatening, or considerable exposure to noxious substances. Medical attention is required.

Minor injury
A non-permanent injury that may require some medical or first-aid treatment; examples include lacerations, contusions, abrasions, or other injuries that have no residual effect. Further professional medical attention is not usually required.

Inspection
A review focused on the identification of unsafe conditions and compliance to prescriptive regulations or standards.

Installation Permit
A permission that is required to install or alter a regulated product. An installation permit may be issued to a licensed contractor, a person who holds an operating permit, an owner of a regulated product or a homeowner who performs regulated work as permitted under the regulations.

Licence
A permission that allows a person, company or corporation to perform regulated work.

Monetary Penalty
An administrative penalty levied by a safety manager in amounts up to a maximum of $100,000 to penalize non-compliant behavior.

Non-compliance
A failure of a regulated product or work to conform with applicable Acts and Regulations.

Operating Permit
A permission issued by BC Safety Authority that allows the operation and maintenance of a regulated product. An operating permit may be issued to the owner of a regulated product or building where regulated work is to be performed.

Physical Assessment
An assessment where the regulated product or work has been directly evaluated by BC Safety Authority.

Railway Classes
Types of railways regulated by BC Safety Authority:

- **Common carrier railways**
  transport passengers and/or goods and interchange common rolling stock with other railways.
- **Commuter railways**
  exclusively provide rail transportation for passengers in or between urban and/or suburban locations.
- **Heritage railways**
  operate or move only railway equipment of historical significance.
- **Industrial railways**
  exclusively serve and move railway equipment through track switches at industrial sites or as designated by the authority having administrative responsibility.

Reportable Railway Accident
An accident resulting directly from the operation of rolling stock where:

- a person sustains a serious injury or is killed as a result of being on board or getting on or off the rolling stock, or comes into contact with any part of the rolling stock or its contents, or
- the rolling stock is involved in a grade-crossing collision, a collision or a derailment and is carrying passengers, a collision or derailment and is carrying dangerous goods (or has residue remaining), or sustains damage that affects its safe operation, or
- the rolling stock causes or sustains a fire or explosion, or causes damage to the railway, that poses a threat to the safety of any person, property or the environment.

Reportable Railway Incident
An incident resulting directly from the operation of rolling stock where:

- a risk of collision occurs,
- an unprotected main track switch is left in an abnormal position,
- a railway signal displays a less restrictive indication than required for the intended movement of rolling stock,
- an unprotected overlap of operating authorities occurs,
- the movement of rolling stock exceeds the limits of its authority,
- there is runaway rolling stock,
- any crew member whose duties are directly related to the safe operation of the rolling stock is unable to perform the crew member's duties as a result of a physical incapacitation that poses a threat to any person, property or the environment, or
- any dangerous goods are released on board or from the rolling stock.

Safety Order
A regulatory instrument issued to prevent or reduce the risk of personal injury or damage to property. Compliance is mandatory.

Safety Standards Administrators' Group
An advisory body comprised of representatives of the ten municipalities that administer the electrical or gas areas of the *Safety Standards Act* (See Appendix G). The role of the Safety Standards Administrators' Group is to share safety information, standardize processes and interpretations, and ultimately to promote greater consistency in provincial safety management.

Technology Advisory Committee
A non-decision-making body comprised of volunteer industry representatives that has a role in identifying and advising BC Safety Authority on issues related to technical safety, regulatory change and service delivery.

Working Group
A group of industry subject matter experts formed to address a specific safety issue, activity or project. Working Groups research, analyze and make recommendations on a specific safety aspect to their respective technology advisory committee and may be dissolved when the outcome is delivered.

State of Safety Report 2012

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